# The Builder.

Vol. XXXVIII. No. 1945. Saturday, May 22 1880.


## ILLUSTRATIONS.


The New Jewish Synagogue in Florence (Double-page Engraving).

New Synagogue, Brussels: Interior View (Double-page Engraving).


## CONTENTS.


On High Art relatively to Decoration ..... 621
The Indian Collection at the South Kensington Museum ..... 622
Buddhist Architecture in Java ..... 624
Professional Failures ..... 625
The Birth of a Statue ..... 626
Sculpture at the Royal Academy ..... 627
Historical and Anecdotic Pictures in the Paris "Salon" ..... 629
The Architecture of London in the Sixteenth Century. By Mr. Lawrence Sayer ..... 629
Concluding Observations on Party Walls ..... 631
From the Banks of the Seine ..... 631
Proposed Enlargement of the Hanwell Cemetery ..... 631
The New Leadenhall Market ..... 631
The Midland Company's New Dock and Railway Works at Poplar ..... 632
The Fulham New Infirmary ..... 632
Obituary ..... 633
The New Jewish Synagogue in Florence ..... 633
The New Synagogue, Brussels ..... 641
The Champion Hall Estate at Sydenham: Sale of Building Sites ..... 641
Bricks and Concrete from Slag ..... 641
Portland Cement ..... 643
Greek Sculpture and Painting ..... 644
The City Authorities and the Home Secretary as to the Water Supply ..... 644
Chelsea Suspension Bridge ..... 645
Society for Photographing Relics of Old London ..... 645
Competitions ..... 645
The Dispute as to a Chimney at the "Criterion" ..... 645
The Recent Fire in Gray's-Inn-Road: Fireproof Dwellings for Workmen ..... 645
Sewage Farms ..... 645
Alleged Sewage Deposits in the Thames: Important Award by the Arbitrators ..... 646
Parliamentary Jottings ..... 646
Election of a District Surveyor for Bermondsey ..... 646
Surveyorship Items ..... 646
Exhibitions of Pictures ..... 646
Insufficient "Quantities": Hughes v Chamberlain ..... 646
Compensation Cases ..... 646
New Fish-Market, Newcastle-upon-Tyne ..... 647
Masters and Men ..... 647
A Warning to Willesden ..... 647
Vibration as a Mode of Motion ..... 647
The Metropolitan Building Acts: Openings in Party-Walls; Fireproof Divisions ..... 647
Digging and Carting away Sand: Davies v. Sheldon ..... 648
Theatres ..... 648
Cathedral Restoration ..... 648
Church-Building News ..... 648
Books: Spon's 'Engineer,' and Contractors' Illustrated Book of Prices of Machines, Tools, Ironwork, &c., and Engineers' Directory for 1880-81; Various ..... 649
Miscellanea ..... 649


### *On High Art relatively to Decoration.*

SCARCELY can it have escaped the observation of those who take interest in comparing their impressions of works of art with the authoritative judgments which published criticism supplies in such unfailing abundance, that the epithet "decorative" has for some time been repeated with exceptional frequency, and bids fair to establish itself among those terms of the critic's stock which he habitually resorts to for marks of decisive classification. When the meanings of such terms are well defined and well understood, they have an obvious convenience; they save a whole paragraph of exposition that would require to be repeated time after time; they are as useful in art as the acceptation of a single Greek letter is in science for an expression of the approximate ratio of the circumference of a circle to its diameter. But the value, if only the approximate value, of the æsthetic sign, requires to be as definitely apprehended as that of the mathematical, if it is to be of any use,—if it is not to be an illusion that commits us to an equivoque, or puts us off with no meaning at all. Let us endeavour to come to a right understanding on the matter: it is high time to make the attempt, and fortunately at present not too late. Let time and criticism travel forward together much further, and deliberate critical correction of the term may be quite beyond us; we shall find there is some certain manifestation of art to which, whether luckily or not, very probably unluckily, the title "decorative" has become inseparably attached; all we then can do will be to examine the characteristics of such art, in order to enucleate the specific sense which, may be in the teeth of all just analogy, has insinuated itself into the term "decorative." It is better to take time and criticism together by the forelock, and while time is still at command, and criticism is not hopelessly prepossessed, endeavour to satisfy ourselves as to what is the best service to which this intrusive epithet can be applied? What is the definition within the boundaries of which it may most appropriately and most usefully be restricted?

The epithet, it is clear, is precisely one of those which is naturally subject to what Jeremy Bentham called either "a eulogistic or a dyslogistic connotation"; or, to speak "like men of this world," to carry with it according to circumstances, but independently of any distinct and expressed qualification, either decided compliment or equally decided and most contrasted disparagement. It will not do for us when we assume to be censors of the employment of language to suppress the fact out of any false delicacy, that such words are liable not only to casual but to conscious abuse; they afford an opportunity for the uncandid,—and when we deal with human nature broadly we must unfortunately recognise the uncandid,—to assume the air of even enthusiastic admiration while designing, and in effect succeeding, to depreciate. It must be admitted, however, at the same time, that terms of this kind, which hover intermediately between lofty and low appreciation, may be thought by some to be grudged rather churlishly to the convenience of many who occasionally, and by no fault of their own, are challenged for an opinion of works of art, and have really none whatever to offer. It were hard, it seems, to deprive such a one of his time-honoured safe retreat to the dictum,—"that the artist might have improved his work had he bestowed more pains upon it,"—and how then less so to forbid his guarding himself on the right hand and on the left, by declaring what is submitted to him to be "unquestionably a fine decorative work"; that is, to be such as would either do credit to the painter of the Stanze or to a fashionable house-decorator, as the world may ultimately decide.

It is scarcely to be questioned that the epithet "decorative," as applied to a work of ambitious art—in the art of painting, for example,—must inevitably tell in the long run as depreciative. The word has too established a usage in general intercourse for such a result to be easily avoided. We are all familiar with house decoration; we are so familiar, that a picture which is labelled with a cognate epithet is in danger of being assumed forthwith as pertaining to the decorator's stock in trade. There is no reason why house-decoration should not attain to the dignity of a fine art; there is good reason to assert that in individual cases it has vindicated—let us freely say—is vindicating, such a proximate dignity. But be it as frankly permitted to us to avow that so much which passes for or takes the place of true house-decoration is so incomplete or so inharmonious, so unsatisfactory when not so positively ugly, that the title it bears does not commend itself as typical of uniform and distinguished excellence. Assuredly the house-decorator to whom is committed,—to whom is abandoned,—the determination of colours for walls and dados and cornices, or, still further, the combinations of curtains and carpets, of mirrors and chimney-pieces, has the issues in his hands of an amount of pleasure or its reverse that is not to be despised. Those who have suffered by his failures will know best how to accord him honour when he achieves a success to the full height of his opportunities. The designing of patterns and borders is a leading function of the decorative artists, and how admirable have been their productions in all ages—how admirable are they not still even, if, indeed, we do not say especially in those Eastern countries which still are lagging behind the great advances of what we Westerns call civilisation! Something beyond Persian rugs and Turkish carpets, however, was the art of Grinling Gibbons,—the credit of which, as so nobly displayed in the panels of the drawing-room at Petworth, may fairly be claimed by the decorators as the culmination of their functions Strongly contrasted, but still with high claims upon our admiration when at its best, is the style of decoration which made the palaces of France rather gay than glorious in the period that preceded the great Revolution. It is in Italian palaces that we discover the rudiments of this style, and there we are also frequently greeted by that highest form of proper decoration applied to apartments, which may be contributed by the painters who either rose very nearly to the height of truly Fine Art, or were content to stoop from it of their courtesy, for a graceful occasion. Men of fine genius have indulged themselves in embellishing the back or the panel of a musical instrument with an admirable design; stately rooms at Genoa have friezes below their cornices painted with sprightly combinations of trains of sea-nymphs and Tritons as remarkable for execution as for lively invention; and at Venice we are sometimes only withheld from applying the term "decorative" to some of the lavish adornments of walls and ceilings, from awe at even appearing to associate in our minds the works of Tintoret with those

> "Where sprawl the saints of Verrio and La Guerre."

It cannot be disguised that what the world in general is sure to expect when a picture is commended to their attention as decorative, is a work either of comparatively slight or negligent execution, whatever the intrinsic interest of the subject,—or else a work upon which much labour may have been spent, but only unworthily, or at best to bring up to a degree of curious perfection a subject of no particular dignity in itself, whatever its interest to the votaries of curious triviality. From this point of view it may be difficult to object to the description of the pictures in the Louvre, in which Rubens seeks to ennoble the marriage of Mary de Medici, as a decorative series. The vigorous genius of the Fleming was certainly not subdued here by that unhappy palsy which has been apt to withdraw the strength from the hands of later painters,—from Wilkie, Leslie, Landseer,—whenever they had contact with a royal commission or a courtly theme; but the very disproportion of the painter's power to the suggestive occasion of its exercise, transforms its best success into a display of overdone dexterity on a par with the eloquence of a herald, the magnificence of the robe-maker,—in fact, into mere, and far from invariably successful, decoration.

The term "decorative," we shall find, if we trace its re-appearances curiously, is becoming applied more especially to works of art of considerable extent or magnitude,—as though they

are contrivances naturally resorted to in order to get over a difficulty experienced in giving relief to oppressive blankness or dulness; we observe also that criticism on such occasions is given to relaxing stringency, as if, from consideration of this painful difficulty and modest aim, indulgence is to be conceded for the fine-art being spread out rather thin, or admiration invited for the success with which the attenuation has been accomplished. To say that a painting is decorative is, in fact, to say that it is not dignified. If it has in reality that just claim to dignity in the worthy treatment by the artist of a theme susceptible of noble treatment, which should protect it from profanation by slighting disregard, to praise it as decorative is to involve the critic and the painter in disgrace together. But the painter has the fairest ground of appeal against criticism which resorts to this minor key of commendation for no better reason than the critic's mere incompetence to recognise dignity, and appreciate scale of dignity in the example which he is bold enough to undertake to judge,—or from his pure timidity lest the dignity of which he has a glimpse should be disallowed by some formidable authority,—by a dictator of taste too strongly established not to be uncertain and capricious,—or by the clamour of an incompetent but dangerous multitude.

It is the glory of a properly-decorative picture to minister temperate enlivenment independently of any particular demand on attention; and thus its function is at the highest to render secondary illustration and support to a sentiment for which the plenary expression is otherwise secured. But to praise a picture as decorative which is not unworthily ambitious of being recognised as itself the culminating expression of a complex of refined and harmonious interests, is, in truth, not to praise, but to denounce it. It is to subordinate what we assume deserves to be supreme. What may appear to the uncritical as the mere last decoration of an important artistic whole should be, and in the worthiest cases is, its conclusive, its ultimate and highest enhancement. A story is told of an ancient who, at the sight of a statue by a celebrated master was so struck with admiration that he exclaimed, "Speak!" The story, rightly apprehended, tells against the perfection of the work or the sensibility of the admirer, for not only is any portrait worth but little which is not a speaking likeness; but every really fine work of art,—every truly fine work in any art, is a fine work in virtue of achieving an expressiveness equivalent to speech. It is this last endowment, with the privilege of inarticulate speech which is given by the latest finish, which may pass with the "fool multitude who judge by show" as mere embellishment by decoration. The last touch by which Sir Joshua satisfied himself with doing justice to the charm of his sitter,—a charm that had been his despair, — may remain to a materialistic critic but a refined line, a pure tint, or an effect of chiaroscuro—a last decoration; for the painter himself it made his portrait sympathetically vocal. In Gothic architecture, the definition of orders of mouldings by deepened hollows,—the floral carving of cusps, bosses, capitals; in Greek architecture the fluting of columns, grooving of triglyphs, carving of string-courses, may be considered as ornamentation,—as decoration, if we please,—but they are to the structure what the play of feature is to the face,—the emphatic tone to the voice. Who shall dare to speak of the Panathenaic frieze as a decorative composition? True it is that as we follow group after group of the Athenians in contest with Centaurs which occupied the metopes of the Parthenon, we come upon more than one group which is so inferior to others as to invite the designation; but the series so far as preserved was originally but one member of a set of varied subjects which had all a special reference to the traditional history and sacred associations of the Athenians. The pediments of many Greek temples were destitute of sculpture: to fill them with sculpture was to add a final embellishment; but it was in this last decorative addition that the prime dedication of the prime political power of Hellas became truly vocal,—spoke. In these combinations the artist whose genius ruled the entire work proclaimed, in the manifestation of Athene born full-grown from the brain of Zeus, that the ideal of his countrymen was the union of intellectuality and energy; in the victory of their patron goddess over Poseidon, the power of the sea, that the genius of the native population was to dominate external influence, and make the civil authority supreme over violence and war. It is under such inspiration that the opportunity for a decorative work is taken advantage of to raise it to the highest dignity of art,—when decoration is a term no longer thought of.

Fine art may, then, on the one hand, easily forfeit its opportunities and decline into the merely decorative; and, on the other, the occasion for the enlistment of decoration to add a heightening charm has not unfrequently ministered opportunity for the noblest display of art. Few productions may seem to be more inevitably confined to the lower range than those of the tapestry loom. The tapestries of the hall at Hampton Court are decorative in the most specific sense, and as we look at them we may well mistrust the possibility that tapestry, especially when meddling with historical subjects, can prudently pretend to be anything more. The art succeeds in exhibiting brilliant and well-contrasted colours, heightened by gold ornament and draperies golden in the lights, in broad effects relieved by delicately-worked accessories. But the glory of true delicacy and accuracy of outline is denied to it, and most especially it is at fault and at disadvantage in the all-important delineation of the human face,—the least discriminations of feature and outline on which expression ultimately depends. What, then, can tapestry supply to us but an accessory to furniture? The question is answered by the genius of Raffaelle. It was for such furniture, to complete the fittings of the Sistine Chapel, that he produced the cartoons. In these he was perfectly on his guard against allowing his practice of fresco or of oil pictures to divert his attention from the proprieties and possibilities of the occasion. He carefully indulged tapestry, with its opportunities for broad expanses and bold cast of drapery, for ornamental details of dress, for floral accessories; he was careful,—even at the sacrifice of accurate perspective,—as in the Calling of Peter,—to keep the heads of his important figures of a size which should least betray the chief difficulty of the loom. In consequence of such management his designs, had they only been preserved in the semi-obscuration of tapestry, would have worthily carried down the sacred sentiment of the paintings of his predecessors and his great contemporary on walls and ceiling, and would have merited to be immortal.

We have only to look upward, indeed, to that ceiling to find set before us an exemplar of how marvellous the perfection may be of painting that still only pretends to be decorative, and of how distinct is the line which separates that perfection from the loftier achievements of the art which superadd to decoration the glories of those sentiments by which humanity seems to come most closely into sympathy with what it apprehends as the divine. The various subjects from a systematic condensation of Biblical history are inclosed in a representative architectural framework, certain parts of which are shown as supported, on the principle of Caryatides, by pairs of child-like figures; these pairs are paired again, and their specially decorative character is emphasised by one of these pairs exactly repeating its associated pair with the simple difference of reversal of right and left. The tracing used for one group was reversed for the other, and thus the same supporting child is on the right upon one side and on the left on the other, and has its lighted and shaded sides of necessity also varied, and, indeed, reversed. Still other figures in more freely-varied attitudes, and how wondrously invented and executed, are kept subordinate and are strictly extraneous to the immediate sequence of the epic theme. Thus far we allow the limits of true decoration,—of decoration proper,—to extend; but the Biblical subjects and the figures of the Prophets and the Sybils are in no sense to be spoken of as decorative relatively to the architecture; they are like the "Last Judgment" on the eastern wall, not adjuncts to a monumental structure, but the final,—the all but articulate,—expression of the loftiest meaning of the entire artistic composition.

A critic, then, is bound to be conscientiously careful in his application of such an epithet as decorative to a work of ambitious art; if he lapses by misapplication, he will be liable to do injustice where injustice is most of all to be deprecated, or he will expose his own incapacity to recognise in a composition of unusual extent and original scope any worthier success than might be answerable for a supply of ornament by foot superficial per contract to the trade. If ever the plain walls of public buildings that now are dumb witnesses to national indifference to art are to be worthily embellished, it must be by an art which is decorative indeed, but decorative and a great deal more; that is, suggestive of thought imbued with sentiment, that speaks from mind to mind,—that presupposes something more in the beholders than mere appreciation of graceful lines in fanciful combination,—than lines, however admirably harmonised,—and even than design, however masterly in itself,—that, after all, delivers all the effect it can deliver at the instant, and, pleasing at first, has its best honour afterwards in recalling distinct attention no more and remaining inoffensive.

Are such aspirations too ambitious? If they are so, so they must be; but in falling back upon the easier and cheaper luxuries, we must accept association with the poor dupe, Mrs. Quickly, who pawns silver plate and hangings at the interested suggestion of Falstaff:—"Glasses, glasses are your only drinking; and for the walls, some pretty slight drollery, the story of the prodigal, or the German hunting, in water work."

## THE INDIAN COLLECTIONS AT THE SOUTH KENSINGTON MUSEUM.

LONG before the India Office existed as a department of the Imperial Government, the foundations of an Indian collection of objects, artistic, historical, ethnological, botanical, and commercial, were being laid, not only by things "rare and curious," like the horns of a fish, called the monodon, fixed in a block of wood,—like idols, arms, specimens of cottons and wools, kincobs, ivories, and jewels, which captains of vessels trading between India and this country presented to the "Court of Proprietors," but also in later times by trophies of war, and splendid offerings made by native rajahs at Durbars. When Charles Lamb, James Mill, and Thomas Love Peacock sat at their desks in Leadenhall-street, "John Company's" stores and cellars were being filled up with material evidences of the great East Indian Empire like those above mentioned. But it would take too long a time to tell the story of how these particular collections have since been developed and made known to the public, through Indian Courts at international exhibitions, from that held in the Crystal Palace, Hyde Park, in 1851, downwards, or of how they have peregrinated from Leadenhall-street to the United Service Institution, in Whitehall, and to roof apartments and basement storerooms in the present India Office, like political prisoners in Venetian *piombi* and *pozzi*, and thence, during an interim when exertions were made to find a home for them in a special building on the Thames Embankment, to South Kensington, where they have rested.

Opinions having been matured as to their educational value, the expression of these opinions has taken effect in the allotment of sections of the collections, including quantities of valuables which had lain *perdu* in storerooms, to different museums in the metropolis. Thus, the British Museum has received a contribution of archæological interest, the museum at Kew one of botanical importance; and the South Kensington Museum, as the nation's emporium of works in which is displayed the application of fine arts to industry, has become enriched by Indian works of cognate description. Loans from her Majesty the Queen, and other owners of Indian art-work, have been added to this last-named collection, and the whole is now arranged under sections such as architectural and other sculptures, pottery, jewelry, arms and armour, textile fabrics, carpets, metal objects, utensils, idols, &c. Its special Indian character has been preserved by the separate housing of this combined collection in the Exhibition galleries which run along the east side of the Royal Horticultural Gardens. These galleries have now been connected with the main buildings of the South Kensington Museum. For the first time, visitors will certainly find a well-arranged, and no doubt soon a thoroughly labelled series of works of Indian art which is unrivalled. In extent it outvies the remarkable sister collection of Persian art, and the bare contemplation of these two accumulations creates a thirst for equally adequate presentments of Chinese and Japanese art.

Before, however, noticing certain features of the Indian Collection, it may be well to recall to mind the three divisions of which General

Cunningham considers Indian art is broadly composed. In respect of European art we are well acquainted with Grecian, Roman, and Christian sections; whilst in respect of Indian art we have to remember the Brahmanical or Hindu, the Buddhist, and the Muhammadan sections. In the Hindu and Buddhist, human figures, animals, plant-forms, and other natural objects play important parts as details of ornament; in the Muhammadan, such motives are, as a rule, excluded. This is particularly the case in early works. A characteristic of design in such works is geometric distribution of line forms, a style which in its simplicity is generally considered to have originated with the Arabs, by whom it was spread in course of conquests of parts of Africa, Persia, and India. In later times, rules of Islamism have been transgressed, and Muhammadan ornamentists under Mogul influence have composed patterns in which birds and flowers are introduced.

The immense area of country subjected to Brahmanism, Buddhism, and Muhammadism is indicated by the various expressions of similar ideas to be seen in Indian works of art. Thus, while in Europe we have a uniform Saracenic style, in India, corresponding Muhammadan art is marked by some eight different varieties. And these, as Captain Cole says in his catalogue of Indian art, are to be accounted for "by the meeting and mixing of the local traditional art of the Buddhists, Jains, Hindus, and Dravidians with the art which came into India with the Pathans and Moguls." Cursory mention of matters like these conjures up an almost terrific maze of intricate and devious windings. Much, nevertheless, is to be learnt from simple inspection of works of art. Analysis of conditions of origin follows when acquaintance has been made with external appearances.

The principal entrance to what may be called the New Indian Museum, is in Exhibition-road. The first hall contains specimens of sculpture in stone, and casts from typical monuments. An important series of fragments of Græco-Buddhistic art, dating from soon after Alexander's invasion of Bactria, is lent by Dr. Leitner. In many of the Buddha heads, the solemn Hindu type of countenance reveals itself as it were through an unmistakable flavour of Grecian art. Hair arranged in graceful knots, fillets round the forehead, and draperies suggestive of many-folded chlamys and toga, indicate Grecian influence. In the centre of the hall stands the full-sized cast made in 1869–70 by Captain Cole, R.E., of the eastern gateway of the Sanchi Tope in Central India. This work is Buddhistic, and dates, according to various authorities, from between 250 B.C. and the year 1 A.D. Along the walls are screens hung with reproductions of architectural and ornamental details, mostly of Hindu art of the ninth and tenth centuries. The Brahmanical bull and bell frequently appear as devices. Beyond the Sanchi gateway stands a *facsimile* in plaster of the bracketed pedestal or pillar of the Emperor Akbar's throne at Fathpùr Sikri,—a specimen of Mogul art of the sixteenth century. Akbar, who was not bound by prejudice, induced artificers to effect a union between Hindu and Mussulman styles, and showed catholicism of character by marrying wives who respectively were Christian, Hindu, Turkish, and Muhammadan. Other examples of the art of his time may be seen in the casts of pillars from the palace of the sultana at Fathpùr Sikri, and a portion of the porch of Sheik Salim Chisti's tomb, also at Fathpùr Sikri. This latter is arranged about and above the doorway leading to the staircase, which we ascend, if we care to observe the numerical order of the various rooms.

Room I., or the south gallery on the upper floor, is devoted to a display of carvings in wood, inlays of ivory, silver, and ebony, and of marbles as applied to furniture, boxes, desks, musical instruments, and small objects of utility. From Bombay come sandalwood works inlaid with ivory, silver, and ebony, as well as appropriate bold floral devices, skilfully carved in dark wood into table-legs, chair-backs, &c. Madras contributes smaller carvings in sandal-wood, and Bijnore some heavy ebony works. A papier-mâché palanquin, which might have been despatched to carry Lalla Rookh to her poet husband in the mountains of Kashmir, stands in the centre of this room, brilliant with its gold and high-coloured decoration, of which, in its application to trays and other small articles, there are a number of examples. There are specimens also of coloured marbles inlaid into white, some in delicate floral patterns, some in broader designs. Of these last named, a panel representing Orpheus with his lute, taken from the Hall of Audience at Delhi in 1857, is evidently a work done in imitation of Florentine mosaic. It is recorded that in 1688 four Florentine mosaicists were despatched by the Grand Duke of Tuscany to the Great Mogul. The mosaics on the Taj Mahal at Agra are the work of an Italian, named Austin de Bordeaux. Around the walls of this first room hang a number of admirable water-colour sketches of Indian buildings, scenes in towns and country, people of different castes, officers, and such like, by Mr. William Carpenter. Tippoo Saib's model of a tiger mauling an English officer is in this room, and having undergone repair, the organ inside the tiger's body may be played during the roars and moans which issue from tiger and man.

In Room II. we have a collection of pottery, consisting of vases, ewers, hokah-bases, plates, cooking-pots, and tiles in glazed and unglazed earthenware; turquoise blues and rich greens are prevailing tones, but dark brown glazed plates with light yellow patterns, from Scinde, rude blue and white ware from Martaban and Delhi, and tiles with relief ornament and pierced patterns, should not be overlooked. The Indians do not produce such fine ware as the Persians.

A large collection of arms, armour, and accoutrements occupies Room III. Her Majesty the Queen lends an ivory and gilt palanquin and howdah with sumptuously embroidered covers, a bullock-cart, and two pieces of small field ordnance which belonged to Tippoo Saib. One of these guns is "made of metal the currency of the country." Twelve glass cases contain arms decorated with enamels, precious stones, and damascened work. Amongst these should be noted some guns from Scinde and Rajputana, mounted with *champlévé* enamels rich in translucent greens and blues upon a silver ground. Fine coats of mail and damascened golden and watered steel casques, with aigrets to hold peacocks' plumes,—emblems of Kumara, god of war,—are fully represented. One of the golden casques has a close likeness in form to the Phrygian cap worn by Venetian Doges. The splendour of jade handles, jewelled, of golden and embroidered scabbards, of enamelled bucklers, engraved nautilus-shell pouches, and, in fact, of precious materials skilfully treated to enrich the appearance of implements of bloodshed, is completely manifested. Against the walls are flat cases in which are picturesque trophies of weapons of offence and defence used by natives of all parts of India. Each case is marked with the name of a tribe or locality. The natives of the Andaman Islands use ivory and steel boomerangs; in Assam broad-bladed short-swords are sheathed on one side only, and from the hilts of some depend tufts of human or horse hair. Like the Japanese Wakisashi, handles of knives from Darjeeling are covered with the granulated skin of the shark. Richly-carved ivory handles of Burmese swords are remarkable, as well as a quaintly-shaped shield, reminding one of an Italian *Cinque-cento* escutcheon, from Borneo, where daggers with wavy blades are in much request. But it is impossible to attempt close descriptions of these objects. The curious amateur and student may be exercised to reconcile different names given apparently to similar articles; whilst the unlearned will not fail to be impressed with endless varieties of "Dhas," "Ayda Kattris," "Kukris," "Tulwas," "Saifs," "Pattas" or "Puttahs," &c.

Passing now between two golden Burmese State umbrellas, we enter Room IV., filled with jewelry and personal ornaments. A high dado of glass cases, containing native jewelry of all sorts,—bangles, necklaces, waistbands, armlets, turban ornaments, and rings, in beaten and chased work, in fine chain and delicate filagree work, some enriched with enamels, others glistening with precious stones,—is formed round the walls of this room. A striking object in the midst of this glitter is a throne or State chair covered with *repoussé* plaques of gold, which was used by Ranjit Singh, the possessor at one time of the famous Koh-i-nur diamond. In the cases disposed about the room will be found many sumptuous works of the jewellers and goldsmiths' craft. They are seen to great advantage on their dark blue and morone velvet backgrounds. The resplendent enamel work from Jaipúr finds its chief exponent in an elephant goad some 20 in. in length, bejewelled with spiral bands of flat faced diamonds, and set near the goad with rubies. In the same case with this magnificent specimen are necklaces of pearls, rubies, and diamonds, the mountings of many of which are of enamel work. Carvings in jade, jewelled and not jewelled, occupy two cases; a case beyond contains cups and other objects cut in rock crystal; another case is allotted to good specimens of "Kuftgari" work, steel intricately inlaid with gold. In another case are red gold and fair gilt vessels from Burmah and Siam. Some are elaborately chiselled, and others incised with patterns, the incisions being filled in with a black composition like the niello of Masa Finiguerra, Francia, and other Italians. From Rangoon are gold bowls, pagodas, helmets, &c. Amongst these must be noticed a gold waistband with a scroll pattern, carved and engraved; in character of design, this band forcibly reminds one of early Gothic or late Byzantine gold work, whilst a tassel of beaten leaves, springing from sixteen stems, has an Etruscan appearance.

Room V. contains works in metals like brass, bronze, zinc, and white metal. Bowls, bottles, ewers, incense-burners, and idols group themselves into serried ranks under the protection of glass cases, each of which is marked with the name of the locality whence the articles it contains have come. The series of metal gods is numerically strong, and is supplemented by deities carved in marble, stone, and wood, painted and gilt. Considering, however, that the Hindoo Parthenon is reputed to include over 1,000,000 gods, a complete representation of it will not be expected, and probably not desired. Nevertheless, there is an almost alarming array of deities and sub-deities, "avaters," or impersonations: Vishnu as Siva, Krishna as a monkey,—as a child; and many other corporalised human attributes, each having a power to assume one another's individuality or particular virtue or vice. A set of "lingas" will arrest the attention of students of comparative theology and mythology. But the import of such symbols has very much undergone absorption or metamorphosis by Hinduism, which, by grotesque man and animal shaped gods, has affected the meanings of that purer idealism which is traceable to times of solar myths and worship in its primitive form. So will be seen here the "linga," at one time emblem of creation, productiveness, potency, and such like, occupying a place in temples of Siva, one of whose properties in the Hindu Trinity is that of destruction. A piece of engraving upon metal, of the third century, may be seen in the small circular vessel, or lota (No. 02910), of light-coloured bronze, which is placed in the case of Kashmirian metal-works. Dr. Birdwood has related how this "most interesting of all Indian lotas" was "discovered by Major Hay in 1857, at Gundlah, in Kulu, where a landslip exposed an ancient Buddhist cell, in which this lota, with others, had been lying buried for 1,500 years." The subject represented on this lota is Prince Siddhartha, before his conversion as Sakya Muni, the Preacher of Buddhism, going on some high procession. "An officer of state on an elephant goes before; the minstrels, two damsels,—one playing on a flute [a figure suggestive of Krishna!] and the other on a *vina* [a boat-shaped harp],—follow after. In the midst is the Prince Siddhartha, in his chariot drawn by four prancing horses, and guarded by two horsemen behind it." This ancient relic shows how a *status quo*, in respect of design and handicraft, has been maintained to the present day; and this can be verified by a reference to specimens of modern Madras metal-works. About this room are some brazen pedestal candelabra, the ornamental motive of which is the peacock, with outspread plumage, standing over flat vessels, from the lips of which issue the wicks of the lamps.

The staircase outside Room V. conducts down to the lower rooms. Textile fabrics of all kinds abound here. One side of Room VI. is clothed in rich glistening and dainty gossamer fabrics. The brightness of Mr. Prinsep's great picture at Burlington House cannot compete with the effulgence of the kincobs here. In the company of these "Clothes of gold . . . . well wrought and craftely depaynted," with exquisite surface designs of minute kaleidoscopic description, polychromatic and harmonious, are lengths of gauze nets, and cloudy muslins woven and embroidered with patterns. By the windows on the opposite side of the room are collections of materials for gold, silk, and thread lace-making and embroidery. The smaller Room, No. VII., is full of printed cotton goods; while beyond

are examples of ancient and modern carpets contributed by Messrs. Vincent Robinson, of Wigmore-street. We cannot, however, stay to adequately describe the close velvety pile, the excellently-balanced distribution of curious floral and other symbols depicted in rich, time-toned colours of the two large Mogul sixteenth-century carpets which serve as *portières* at the entrances of Room VIII. A large oblong rug is displayed on the centre of the inner wall of this room, and is believed to have been made in the sixteenth century in Afghanistan. On a special platform is displayed a carpet certainly a *capo d'opera*. Kashmirian or Turcoman rugs hang here very like those which Venetian painters, Carpaccio, John Bellini, and others, have often introduced into their paintings. Overhead are softly undulating tent-coverings of thin cotton printed with colours. From the carpets we pass through a room devoted to a miscellaneous collection lent by the Asiatic Society and Dr. Leitner, and thence we reach Room X., which contains carved and painted models of notable architectural works, such as the caves of Elephanta, near Bombay; the Minar, or tower erected at Delhi in the twelfth century by the Pathan emperor, Kutb-ud-din; and the tomb of Ranjit Singh. Specimens of stone and plaster windows pierced in complex geometric designs, are shown upon screens; and by the exit from this room are examples of wood-carving more or less modern, and not important, saving a dusty and begrimed doorway of Muhammadan art, the panels of which are set in margins of beaten silver plates.

A two-volume handbook upon "Indian Arts" has been prepared by Dr. George Birdwood, C.S.I. As a portion of the South Kensington Museum, this Indian section will be opened week by week on three days free to the public, and three days to students, when a fee of 6d. is charged for admission. It will be rightly inferred from this hasty review of the collection that the gloom and dinginess which have been inseparable from the former East India House collections have given place to brightness, cleanliness, and order. There is considerable work to be done in establishing a system of uniform nomenclature in the labels. And this is a matter of no slight importance in dealing with some twenty thousand articles, each of which is destined to teach a lesson to those who look at it. Many of the present labels are evidently of a temporary character only.

## BUDDHIST ARCHITECTURE IN JAVA.

THE collection of casts from Buddhist works in the India Museum, some notice of which we have already given, might serve as texts for many dissertations. Much has yet to be learned of the art and of the architecture of Asia, and daily the mystery of the art of the so-called cradle of the human race is being revealed to us. Diligent and enterprising archæologists are clearing away the darkness and ignorance which surround our acquaintance with one of the many phases of the civilisation of a past contemporaneous with our own. Our readers had the opportunity afforded them in these pages of following the latest inquiries into the mysterious architecture of the Buddhists, carried out by the active energy of Mr. William Simpson, in Affghanistan. Simultaneously, with the communication of Mr. Simpson's interesting researches to the world of English-speaking scholars, M. Desiré Charnay, entrusted by the French Government with an archæological mission in Asia, communicated to the pages of the *Tour du Monde*, the medium in France of the experience of travellers, two interesting articles,—fully illustrated, with the aid of photography,—on a visit made last year to the island of Java, where, as is well known, exist some of the most curious remains of Buddhist architecture to be found in Asia.

M. Charnay's chief aim in visiting Java was to study the resemblance of architecture of these Buddhist remains with that which he had lately explored in Central America. The most important of these ruins exist at Boeroe-Boedar, and at Brambanam, on the Dieng, two days' journey from the settlement of Samarang, in the eastern portion of the island of Java.

Prevented by the terrible state of the roads, after a desperate attempt, M. Charnay had to forego the pleasure of visiting some other ruins on the Lawoe (pronounced *Lavou*), but consoled himself when he learned that the ruins of Soekoe were only the trial of a restoration of an epoch of decadence dating from the fourteenth century. According to Sir Stamford Raffles, they are even more modern, and belong to the fifteenth century (1435 to 1440), less than forty years before the extinction of the Hindoo religion in Java. According to the same author, the monuments at Soekoe are the coarsest, and least curious of the remains which are scattered over the island, and belonged to a depraved sect of Brahminism. The most interesting feature of these ruins, as indeed of all the monuments of the last Japanese epoch, is their extraordinary resemblance to the architecture of Mexico and Yucatan. It may be a pure piece of accident, adds Mr. Fergusson in his commentaries, but the resemblance is none the less striking. The ethnologists raise no difficulty against the supposition that the Malay race may have extended to Madagascar, and in this case there seems little to oppose the further supposition that it may have extended to the American continent. "The resemblance of the monuments," writes M. Charnay, "struck us in a marked degree, having seen those of both countries, Java and Central America. Fergusson says that the Javanese cannot, any more than the Americans, have learned instinctively or taught each other the art of building, but that an antique and common faith, blood, and hereditary instincts survived, and, revealing themselves in both people, have produced the same effects at these great distances. Were this not the cause, this resemblance is the effect of a pure accident, the only case which can be pointed to as existing in the universe. All this encourages me," continues M. Charnay, "in an hypothesis which is dear to me, and which I shall endeavour after renewed study to make a certainty."

In the description of his journey to the temple of Boeroe-Boedar, M. Charnay gives us a proof of his descriptive powers, and very amusing is his account of the incidents and accidents of the route; we hasten, however, over these to reach with him the village near which are situated the ruins in question. A superb alley leads up to the artificial hill on which the temple rises, "in the midst of an enchanting landscape, one of the most beautiful monuments in the world,—the temple of Boeroe-Boedar." "There," (we cannot do better than quote the traveller's own words) "we remain stupefied before a creation of the most astonishing and grandiose conception. It is impossible at first to take it all in; the eye embraces only a view of the whole, which crushes one, and then at length the mind realises the scene; the features stand out like so many marvellous edifices, the details like a series of masterpieces. The beautiful vegetation surrounding us, the alley with its long lines of monsters of every form and Buddhas of every size; the strange edifice, blazing in the sun; beauty, grandeur, light, all combined to throw us into an ecstasy and make an impression such as is never effaced. What effect must this monument have produced in entirety, if, a devastated ruin, it creates in the spectator such emotion. To attempt to describe it would be vain; the photograph alone can give of it a faithful representation." And justice certainly must be done to its use in the hands of the skilful artists who have reproduced the views which illustrate M. Charnay's article. The general view of the temple with the two or three carefully-executed details of the bas-reliefs reveal an art which, in its beauty and sentiment, one would little expect to find in the now almost deserted island of Java.

The Dutch Government has already published a monograph on the temple, the text written by Dr. Leemans, the learned curator of the Museum of Leyden, but the study is incomplete. The illustrations are from drawings which in such matters cannot be looked upon with such confidence as the photograph; but the work is most valuable, and for those readers interested in a further research, we refer them to the pages of Dr. Leemans's instructive work, from which much of the information which follows regarding the temple has been taken.

The Temple of Boeroe-Boedar, which, according to Dr. Leemans, dates from the eighth century, is the most brilliant manifestation of the genius of Buddhism in Java, studded with so many other monuments. It rises on a natural hill, which serves it as a base, and the portion which constitutes the temple is the summit of this hill. It is an enormous group of five broken cornices, over which are scattered a large number of niches for the Buddhas, and bordering the galleries running round the building, in which are developed a whole series of most interesting bas-reliefs.

In these are depicted the whole legend of the future Buddha,—the history of his parents; the divine annunciation that the god Buddhisatva will be incarnated; she gives birth to a son, Prince Siddartha, who will abandon the court of his father and its pleasures, will renounce the crown, to put on at twenty-nine years of age the poor clothes of the anchorite, and become Cakya-mouni, the great reformer. It is, in fact, the story of Buddha in entirety, in which, in 1,636 pictures, 25,000 persons, quarter and half lifesize, in high relief, dance, speak, and sing the marvellous history of the god. It is not grotesque, as in certain temples of India; all the figures live, and the compositions are perfect.

The cornices retire one behind another, forming a truncated pyramid, which is surmounted by a terrace on which a series of rotundas shelter a whole army of Buddhas of life-size; there were no fewer than 555 in the whole edifice. In the centre of all, an immense rotunda of solid masonry covers a colossal Buddha. The monument has a base of nearly 130 yards, and a height of about 130 ft. From the summit of the large rotunda, the panorama which the visitor enjoys is described as magical; and some idea may be formed of the immensity of the work when it is stated that all the bas-reliefs placed in a line would reach to a length of more than three miles!

The general conception of the Temple of Boeroe-Boedar is essentially Buddhist, and strikingly recalls in its form the topes to be found in India, and the earliest of which reach back to the time of Asoka, the Constantine of Buddhism. It was he who, in fact, 250 years before Christ, raised to the position of a State religion a worship which, till then, was confined, as was the case with Christianity previously to Constantine, to the poor and the humble, and which alone existed by tolerance.

The most remarkable of these topes are to be found at Sanchi, in Bhopal, at Sarnatto, near Benares, at Gandhara, in Afghanistan, and at Manikyala, in the Punjaub, between the Indus and the Hydaspes. They were destined to guard the relics of Buddha,*—relics inclosed, in the first place, in a *dagoba*, a species of reliquary which occupied the centre of the tope. These monuments, as is now generally known, had a conical form, resembling a hay-cock, or a semi-spherical dome; they were solid, and each king adding new relics to the deposit already formed, added also a new thickness of masonry to the old building, in such a manner that by successive additions these edifices attained considerable dimensions. Thus that of Manikyala, which most recalls that of Boeroe-Boedar, had attained, by these additions, a diameter of 127 ft., or about 400 ft. in circumference. It had two exterior galleries, round which the faithful never failed to walk in their pilgrimages, these galleries increasing the diameter to 159 ft.; its circumference to 500 ft.

The five galleries of Boeroe-Boedar, destined also for processions, recall exactly the ancient tradition, which, added to its form, its solidity, its *dagobas*, and its sculptures, leave no doubt as to its purely Buddhist origin. In Burmah, at Mengûn, there is quite a modern pagoda, with five circular galleries, as at Boeroe-Boedar, and it is, indeed, remarkable to find this same tradition and the same style of architecture perpetuated through a period of 2,000 years, being thus preserved at epochs and in countries so distant.

At Brambaran, which M. Charnay also visited, the ruins, he tells us, are composed of a first group of temples placed on pyramids, and of a certain importance, judging by the effect of the mounds and *débris*. One only of the temples is in part standing, though the writer visited four little chapels, in which he found a number of Hindoo divinities, in perfect preservation,—among others, a Ganesa, and a goddess Laksoni. Ganesa was the god of wisdom. He presided over marriages, and, indeed, the principal transactions of life. He had only one tusk (he is represented as possessing an elephantine form), having lost the other in a combat with Vishnu. Before each idol is a small subterranean room, in which was concealed the priest who gave the oracle. The whole vicinity is scattered over with large slabs, mutilated idols, sculptured stones, and esplanades, where were formerly other temples and the dwellings or palace of the priests.

M. Charnay describes how, had he taken the

* The body of Buddha was by his directions divided into 84,000 different parts, and distributed, according to the belief of the Indians, throughout his empire.

assurance of his guide, he would have missed some of the most interesting of these ruins. Pushing further into the country he found another group of temples, disposed in squares, by five on each side, with a central edifice of the same form, but more important,—in all, seventeen temples. At 500 yards' distance, on an immense species of platform, with four entries, guarded by monsters, M. Charnay came upon the most considerable of these groups of temples, and the visitor remains astonished at their number. It is the Chandi-Siva. There are about 300, disposed in squares, forming three large alleys, with a central edifice of considerable size. All these temples are charming pavilions, of an elegant architecture. They are three yards side length, by eight in height. These edifices all resemble each other; they alone differ in the bas-reliefs which decorate them. They contained, and still contain, in some cases a Buddha of life-size; in others, in little niches, admirably sculptured, Buddhas in miniature.

The ruins of Brambaran are said to belong to the fourth century, but no data support this statement; and at Batavia the authorities assured M. Charnay that no documents exist respecting these temples. Their constitution, however, and that of the idols they contain, point plainly to a Djaïnic origin. There are Buddhas, or rather *tirthancars*, Djaïnic gods and saints mingled with the gods of the Brahman Olympus. It naturally follows that Buddhism, after having succeeded to Brahmanism, was converted to Djaïnism,—a combination or fusion of the two doctrines, and hence that the monuments of Brambaran belonging to this latter religion are certainly more modern than the temple of Boeroe-Boedar. Sir Stamford Raffles attributes the Brambaran temples to the eleventh century, and this assertion has every appearance of being correct.

We only find one ancient document which speaks of Java. That is a description of the Buddhist countries by the Chinese priest, Fa hian, in 415. This priest had gone from China to India in the year 400, in search of sacred books, and on his return fifteen years later he was thrown by a tempest or by currents on to the coasts of Java. He tells us that the Brahmans flourish in the island, but that the law of Buddha is not held much in honour. This shows, in the first place, that Brahmanism had preceded Buddhism, and that the monuments to which we have above referred did not then exist; they belong, therefore, to a period posterior to the fourth century.

In so far as interested us personally, concludes M. Charnay, we had attained our object; we had assured ourselves of the resemblance we had suspected between the Brahminical and Buddhist monuments of Java and the monuments of Pelenqué and Yucatan.

These resemblances are the following:—Coarse idols at Artza-Domas, near Buitenzarg, recalling the idols of Mexico and Copan in Guatemala; the pyramid, always used for the temple, with a flight of steps resembling those to be found at Palenqué and in Yucatan; the disposition of the temples, species of oratories containing the idols alone, with a subterranean room for the priest to give his oracles; the same interior construction of the temples; details of ornamentation, terraces, esplanades, the same as in Mexico and in Yucatan; and finally localisation in religious centres far from towns and cities, and forming places of pilgrimages, as at Palenqué, Chichen-itza, and, later on, at the time of the conquest at Cozamel.

---

**A Memorial.**—The memorial provided by a national sixpenny subscription in memory of those who perished by the wreck of the *Princess Alice*, in September, 1878, has been erected in Woolwich Cemetery, at the summit of the hillock where the bodies of the unclaimed dead lie buried. The memorial consists of a cross of white marble, about 16 ft. high, and the pedestal is inscribed as follows:—"The saloon steamer, *Princess Alice*, returning from a pleasure excursion, was wrecked off Tripcock Point by collision with the steam collier, *Bywell Castle*, on the night of September 3rd, 1878. It was computed that 700 men, women, and children were on board; of these about 550 were drowned, and 120 were buried near this place. To the memory of those who perished this cross was erected by a national 6d. subscription, to which more than 23,000 persons contributed. 'In the midst of life we are in death.' 'Jesu, Mercy.'"

## PROFESSIONAL FAILURES.

Among the many salient features which divide one profession from another, there is none that affords a stronger contrast than the character and effects of failure. We do not refer to that sort of failure which is common to all of them, in which a man simply fails to succeed in the sense of not getting on. In this respect they are all very much alike, inasmuch as want of success is a mere negation. The physician without practice who retires to chambers, or takes up the thousand-and-one odd jobs of his profession which fall to the lot of the undeserving or the unfortunate is in very much the same position as the lawyer, the architect, or the engineer in similar circumstances. In such cases, failure generally means idleness accompanied by the two frequent concomitants of disappointment and regret. The failures to which we refer are not of this kind, but of that prominent sort which come before the public as incompetent efforts to effect some object which is generally desirable. It will be found that there is a close analogy between the character and effects of these failures on a large scale and those of a more insignificant description, which fall to the lot of all professional men with a large practice, and which go to make up the sum of their experiences. In the profession of the law, for instance, there is much in common between the failure of a counsel to win a case for his client and to win a case for the political party to which he has attached himself. In both events there is a certain amount of disappointment as an inseparable consequence of failure, but this soon becomes buried in the past, and ceases to have any influence beyond those who have been immediately affected by it. And in the same way, among the executive branches of that profession, failure may lead to disappointment and a great amount of inconvenience, but at the worst no bones are broken, and if the pressure of the unsuccess is very great, the expedient of "an Act to amend an Act" can always be resorted to. Similarly in the profession of the Church, as matters of practical moment the effects of failure are neither very disastrous nor altogether irremediable. An error of doctrine does not strike the minds of ordinary persons nowadays as the horrible thing which it appeared to be at periods of our history when fire and sword were the consequences of its adoption. It would be difficult to find many men in England at present who would be able to work themselves into fever heat about such controversies as severed friendships and separated households in the time of Cromwell. The novelist who attempted to draw such a contemporary picture as that of the Vicar of Wakefield, in which we find a consummate literary artist like Goldsmith making use of materials that appear to us to be ridiculous, such as the treatise against deuterogamy, would have to go far afield before he found an original in the present day. Neither does failure in the profession of a Churchman to propagate sound doctrine bring about any very terrible consequences. At the worst it only leaves matters pretty much as they were, and, if he is on the high road to preferment, his want of success is not likely to be a serious stumbling-block. As a rule the failures in the Law and the Church have neither of them any very serious consequences as regards the material welfare of the community. Even in the face of mistakes, both professions can generally get along pretty well,—at any rate, until these have been remedied in Parliament or in Convocation. It is very different, however, in the professions of Medicine, Architecture, and Engineering. In these cases the expert is brought directly into contact with the laws of nature, and the experience which is purchased by failure is of a much more serious and painful character.

There is a story told of an examiner for degrees in Medicine, who asked an aspirant for the honour of a diploma what he would prescribe in a certain case of supposed illness. This having been answered, he inquired what next and what next, until the student had brought his imaginary patient into a state of the most robust health. It was only then that the unfortunate tyro was informed that the first dose would certainly have killed the object of his solicitude. Here we find an issue that is in striking contrast to any analogous circumstances in the professions of the Law or of the Church. A law student's answer might be as grievously at fault as that of the unfortunate young person we have spoken of, but even in a case of life and death, in a law court, the prisoner who is badly defended has at least an intervening safeguard in the judge and jury. This has no counterpart in the routine of a private practitioner of medicine. Of still less consequence, at any rate, from a material point of view, would be the failure of a student of divinity to give a correct reply with regard to an obscure doctrine of the particular communion of which he happened to be an adherent. The more subtle the question happened to be on a point of theology, the less it was likely to have a practical bearing upon a cure of souls, but the very obscurity of a bodily disorder is frequently the element of greatest danger when it comes to be dealt with by a physician.

Just as failures in the practice of Medicine are of greater material importance to the patient than the loss of a civil suit is to a client, or the loss of the true meaning of a theologian to a church adherent, so the more prominent failures and successes of physicians affect the community at large in a corresponding degree. A false propaganda in Medicine has victims who suffer from it in a way that differs in kind from any of the effects of bad law or bad theology. One is almost startled at the result upon the lives and happiness of his fellow creatures which must follow on the adoption of opposite systems of treatment, one or other of which must be wrong. It is hardly to be wondered at if laymen, who cannot be expected to decide between the arguments of two opposing schools, when the experts agree to differ, should frequently fall back upon the maxim of *in medias tutissima*, and leave Nature to herself. In the treatment of fevers a large margin of life must certainly have been lost between the extremes that kept the patient in a continual state of intoxication on the one hand, and on the other supplied him with no stimulants at all. The records of science that do not come before the notice of the public contain the materials for a narrative of failure which have implicated the happiness and the lives of thousands of our fellow creatures.

We now come to the consideration of failure in a profession which may be almost said to have sprung into existence within the memory of persons still living, and which is responsible for the safety of nine-tenths of the community. We refer to the profession of engineering in its relation to the travelling public. As in the case of Medicine, there is a strongly-marked distinction in kind between failures in the work of an engineer and those that occur in law or in theology. In the two former the laws of nature require to be dealt with, and a want of compliance with their demand has results that are both material and practical. Fortunately the experience that can be derived from engineering catastrophes is of a character that makes them available as a guide for the future, and here again we find a close analogy between the more insignificant failures which occur in private practice and those great disasters with which the whole country is too frequently startled in the columns of the newspapers.

The arguments to be derived from these events are, fortunately, so definite as to be available for all time coming, and by their proper application experts are enabled to add to that store of knowledge which is the only safeguard against their recurrence. In this way, and under ordinary circumstances, there is something, therefore, to be set off against the fatalities of a great disaster either by sea or land, when we know that the experience gained by it is, or ought to be, the means of preventing the same accident from ever happening again. But as against this consolation we must place the fact that in the race for wealth there will always be found a number of men who are willing to run any risks and ignore any number of warnings, in order to add to their profits. It is in this element of recklessness that we find the greatest danger to the safety of the travelling community, and it almost seems as if the temptation to acquire wealth in the face of experience and warning must be counterbalanced by some sort of checks to be framed in the interests of the public. That such temptations do exist is only too evident, and that they have frequently been yielded to has become painfully apparent. When the ambition of engineers and the cupidity of capitalists are both baulked by their inability to raise more than a certain sum of money for the carrying out of a particular enterprise, the inducements which occur to make it cheap at the expense of efficiency are apparent without discussing them. It is against occurrences of this sort that the public requires to be pro-

tected. Hitherto the standing of the men whose names are identified with the triumphs of science over the obstructions of nature have been a sufficient guarantee that everything that knowledge could desire or experience suggest would be carried into practice. But the honesty of purpose which is so often the characteristic of pioneers in the world of practical science, is apt to die with the men a part of whose nature it had become. Even the traditions of their honesty are apt to be lost. Greedy shipowners, in the early days of navigation by steam, would have found it very difficult to find shipbuilders who would have been willing to risk their reputation in order to supply their wants, and the same remark would apply to the early constructors of our railroads. It is sincerely to be hoped that our engineers and contractors will continue, in the face of all temptation, to support the reputation for good workmanship which has earned for this country the position it has hitherto held, and that it may never be necessary to inaugurate a system of inspection and supervision which must not only fail to fulfil the purpose that belongs to honesty alone, but which will make them the objects of continual distrust as well. It is certain, however, that if they lose the confidence of the public by running risks that are really criminal, something will require to be done in order to protect the lives of the travelling community in the years to come.

## THE BIRTH OF A STATUE.

The enthusiast in sculpture will say that there is no production of art and workmanship that is at the same time so simple and complete as a beautifully-finished marble statue; and he will enunciate this with the thought before him of a lovely female figure, in accordance with the charmingly apt suggestion of our poet Burns,—"Her 'prentice han' she tried on man," &c.

Such a work in beautiful marble does not yearn for colour any more than it does for voice or movement. The Muse of Sculpture ventures but on the emulation of one phase of nature. It is pure form, and form only, which she seeks in the most beautiful material which nature has elaborated to imitate herself; for the best statuary marble possesses just that degree of transparency which is the quality of healthy young flesh. Hence its especial fitness for the representation of poetic and refined human form, lovely, fresh, and pure.

Beautiful white marble! How it was sought for by the ancients for their sculpture! The most familiar Grecian quarries were those of Attica and the isle of Paros. The Pentelic hills of the former yielded the blocks for the Parthenon and its statues and *rilievi*; while Mount Marpessus, in the Ægean island, was explored in every direction for its precious and unspotted stores. These caverns still remain, admired by modern travellers as sources whence the monuments of ancient Greece derived their splendour. According to Pliny, these quarries were so deep that in the clearest weather the workmen were obliged to use lamps; from which circumstance the marble was sometimes called Lychnites, from having been worked by that light.

The largest supply of statuary marbles for ancient Rome was obtained from the quarries on the west coast of Italy, in Tuscany, which are now called those of Carrara, but then bore the name of Luna, from the seaport at which they were shipped. At present this takes place directly at the foot of the marble mountains at the village of Avenza, where they are put on board shallow barks, and transferred, at the neighbouring port of Livorno, to vessels of deeper burden for conveyance to all parts of the world. There are now about forty of these quarries, among the most esteemed of which are those of Monte Crestola, Monte Altissimo, Monte Sagro, Ravaccione, Cavetta, and Seravezza. But in the old times all the marbles from this quarter went under the general name of Luna, the ancient city of Etruria, which then gave its name to the gulf of Spezia. Whether the name was intrinsic or accidental, it was poetically appropriate as applied to the white marbles thence procured, as being so translucent and pure as well to deserve the comparison to moonlight.

If this is an epithet suitable to these marbles, that of sunshine is equally appropriate to those of Paros. Indeed, this exquisite marble has received the name of "crystallised sunshine." It is, as may be supposed, somewhat warmer in tint than the Carrara, and is also larger in grain. The Venus in the Uffizii gallery, which "enchants the world," is in Parian marble; as also was that other Aphrodite of Cnidos, by Praxiteles, which enchanted the ancient world, and which people made pilgrimages by land and ocean to see. In respect to this work Lucian especially expressed his admiration at the beauty and lambency of the marble. There is in the British Museum a very fine small example of this marble in the form of a Psyche's hand holding a butterfly. It is, however, now hidden away, as it has become very dirty.

There has been a theory as to Nature's mode of production of this Parian marble, which may or may not be in accordance with the science of the day, but we venture to allude to it. This is, that the white marble formations in Paros were the work of the unceasing percolation of water for ages through the limestone rock above and around, into the hollow caverns in which it was eventually discovered, by means of stalactites from above and stalagmites from beneath, meeting and becoming consolidated, until at last the result became the exquisite dense crystallised material which the ancient Greeks so earnestly sought for their sculpture that all of it which was pure is now scooped out. Some of an inferior quality is said to exist in the neighbouring island of Naxos, but none at all is reported to remain in Paros.

The above speculation as to the mode of formation of this marble might naturally arise from the quality of its crystal, which resembles, in more than one respect, the character of a very dense stalactite, but we do not venture to support it further than by adding that it was the theory of a naturalist and *savant* of great ability.

We hear now from the best authority that, by actual experiment of modern date, ordinary carbonate of lime, heated under great pressure, has been found capable of being converted into good statuary marble. This probably would assimilate itself to marble of smaller grain rather than to Parian, and be more like that of Carrara or Milan. But, however this may be, and whether or not a permanent and enduring marble could be manufactured by the hands of man, these experiments may, although remotely, point to the mode in which Nature, in her operations over vast ages, and in her extended laboratory, may have effected it.

It is evident, however, that she did it a long time ago, and probably was a long time about it, and the sculptor ought to be proportionably obliged to her for the length of her preparation, and for the beauty of her production; for sculpture would assuredly have been deprived of her crowning glory if she could not have appeared in marble. Thus we do not marvel at its having been said that "there is only one material for sculpture,—marble."

It must be acknowledged, indeed, that the poetry of sculpture is bound up in marble. True it is that the ancient Greeks made as many or more statues in bronze and in other materials as they did in marble. But, then, the subjects they undertook were not unfrequently of such gigantic size and vast proportions that they could not obtain blocks of marble large enough to contain them. Pure and simple sculpture, in its most refined and sublimated phase, must be thought of as of lifesize, or of little above it, not exceeding that which is called the heroic; elevated, expanded, but possible. The Supreme, who knew best how to create the human race, knew also the best size of which they should be made; and a mannikin and a monster equally depart, although in opposite directions, from the modest perfection and logic of nature.

A Titan in art is only permissible when he is placed at such a distance or in such a position of height that he is thus reduced to an approximation to a natural scale. The reason the Greeks did such great figures was that they were representations of gods, and, therefore, altogether exceeded our proportions. But when we seek to portray human nature, it is over the more dignified course to restrict the art to the scale of possible truth; and Nature's formations of beautiful marble readily afford blocks of sufficient size for this.

While, however, we consider the perfection and simplicity of a beautiful marble statue, let us not pass by its intrinsic and precious permanence; in which respect it enjoys so vast a superiority over the productions of the sister art of painting. While periodical lamentations well forth of the withering of frescoes and the perishable qualities of oil paint, how it fades and cracks, and even runs down the canvas, and of the meretricious glare which the competition of modern public exhibitions forces on the painter's art, nothing of the kind is possible in sculpture in pure marble. This simple product of nature possesses its own modest perfection of tint which envies and fears nothing, and in respect to endurance has no element of decay in it. Under moderate protection and conservance it may last unaltered as long as the world does, for it is, at the same time, the most lasting as it is the most delicate of its substances. Not a picture remains of the great masters of ancient painting, while, on the other hand, some of the marble statues of the same period have outlived even the contemporary architecture of which they were the enhancement.

Thus does permanence add value to the perfection of a marble statue, and crown it with an unequalled dignity which no other work of art attains,—a consideration which caused Michelangelo to regret in his old age that he had not applied the whole of his great powers to the use of the chisel, and all his life to the stamping of eternal thoughts in imperishable marble.

And whence and how may arise the first conception of a statue? Well may we inquire, with our great bard, "Where is Fancy bred?" The first thought may be a reminiscence of what the sculptor has actually seen, or it may be an idea of what he might wish to have seen. An incident in nature, a passage in history, a verse of a poet, may suggest it; or it may be an idea without the trace of a parent, except in his own mind. And when is it most likely to occur to him? No time is, perhaps, more probable than when he wakes in the morning, and sweet imaginings come with its breath and the radiance of sunshine.

But his conception must take a tangible form. He is impatient till it does. He rises; he seizes his pencil,—all sculptors should draw, as well as model and chisel, for which the example of Flaxman should be sufficient authority,—he makes a few lines of contour to see how his idea will present itself in its principal view. But, then, if it be a germ of a statue in the round, he is not content with this; he must realise also its other views, so that, if possible, every one of them may be striking and graceful. Unlike a painter, a sculptor does not think of his conception in one view only, but, almost simultaneously, in three or four at once.

Probably he will make a little sketch of each of these, which no one but himself will understand; and if these seem promising, and he warms to the subject, he will not be long before he gets to his clay, and sets up a manikin of it to test its balance and arrangement all round.

At this point of his proposition he may adopt the advice of the old adage of "sleeping upon" his thought. An artist should be in degree morally inebriated in the first conception of an idea, but in the prosecution of it he should be as "sober as a judge" and as keen as an envious critic. Thus he may delay awhile until he can get, as it were, out of himself, and turn his eyes impersonally on the idea which has gathered itself together into human form like the smoke from the fisherman's broken vase in the Arabian fairy tale.

He will seek aid directly from individual Nature; but he must have the idea in himself to make a work of epic art. His assistance from models will be adjective, or his work will but appeal to those who are to be addressed only by the fascination of imitation, and who joy in the imperfections of creation as much as in its beauties. Indisputably there are some classes of art in which the actualities of nature are all in all; but these are not the highest, and it may be remarked that those artists, of whatever branch, who the most insist upon every detail being copied from a model, are not unfrequently those who most egregiously fail in producing the broad truthful effect of Nature in their works. In relation to the attainment of beauty in art a letter of Raffaello is much to the purpose.

In the kindred sphere of dramatic art where could Shakspeare have obtained "sittings" for all his characters? He was a student of Nature with a wonderful instinct; but it was out of his general mass of study that he drew his personages and their sayings; and Sculpture for her best creations has to set after much the same fashion.

The preparation for the sculptor's work will

be in clay, or wax overlaid on a core, or in plaster, and the practice of different times seems to have been very various. The prevailing mode at present is, firstly, to make a preliminary very careful model in clay the full size that the marble is to be. Secondly, as this is a material liable to shrink and alter, to have the form of this, while the clay is still damp and fresh from the sculptor's hands, transferred, by the process of moulding and casting, into gesso, or plaster of Paris, which is a comparatively permanent material, and in which the statue is more light and movable than in clay. The model is then in a condition to be copied into marble in the Italian mode, by the combined working of three compasses, or by the more strictly mechanical method of the pointing instrument, which is chiefly adopted in this country.

For this purpose the plaster model is fixed on one of a pair of twin "scalestones," as they are called in England, and the block of marble out of which it is to be hewn, chiselled, rasped, and refined on the other, and as a first stage of this remarkable process, by means of the guidance of a vast number of measuring points corresponding with each other exactly on the surfaces of the model and the marble, the latter is reduced to nearly the dimensions and proportions of the former.

All this is a great aid to the correct progress of the work, for the compasses of machinery are more accurate than those of the eye. But then begins the true sculpture or cutting in marble of the human form. This, in modern practice, is not unfrequently left mainly in the hands of the cunning workmen and assistants of the "padrone," or principal sculptor; and when the works are very large, of course, this cannot be helped, as otherwise the most efficient sculptor would be, not he of the best head and imagination, but the one possessed of the strongest arm.

In life-sized or smaller sculpture, however, the real lover of his art will not leave the completion of his work to others, any more than a keen sportsman will hire a manor for only his gamekeeper to shoot over it. The enthusiast in sculpture will finish his statues himself. Such is the charm of the marble that the true zealot finds himself inspired by the beauty of the material and carries out his work to a stage that he could not otherwise attain, and to a much higher level than he could reach in the baser materials of clay and plaster.

We cannot, indeed, conceive that Praxiteles could have left the finish of the form of the beautiful Aphrodite of Cnidos to other hands than his own, however experienced; and we know well that Michelangelo hewed his statues and groups himself. The fervour of his genius and "*terribil via*" was such that he could not wait for measurements, and some of his best works have, probably in consequence, remained uncompleted.

Care, however, foresight, and method will enable a sculptor to carve a work in marble with but a rough preliminary model, and it may, in truth, be a doubtful point which is the nobler mode,—whether to make a very careful preliminary model, or, on the other hand, to leave the inspiration of creation in some degree to the time and process of carving the marble itself. The former method may be the most correct, but it may lack, perhaps, somewhat in its result of that indefinable charm of spiritual essence that may be stamped on the marble by its being,—not a translation,—but struck out at once freshly in its original language.

At any rate, it is our idea that the ancient master sculptors were in the habit of working a good deal more on their marble statues and groups with their own hands than is the general practice of the present day.

---

**Plymouth Hoe.**—The question of the erection of a pier under the Hoe has, after years of consideration, been brought to an issue. The company who wish to make the erection have obtained Parliamentary powers and the permission of the Town Council to erect a pier, but a great number of the inhabitants and a majority of the Town Council were strongly opposed to the project of running out from Poor Man's Corner and across the Bull Ring a viaduct to join the pier. At a meeting called by the Mayor in the Guildhall, to test the public sentiment, and to give the opponents of the high-level scheme an opportunity of stating the reasons for their opposition, the proposed viaduct was condemned by a large majority of those present.

## SCULPTURE AT THE ROYAL ACADEMY.

On either side of the vestibule of the Royal Academy hang two works, both bas-reliefs, which form a curious and significant contrast. Both are Scriptural subjects. "The Entombment," by Signor Raggi, represents the conventional school of religious sculpture, in the shape of a bas-relief intended to be placed over the Communion-table in Thistleton Church, Rutland. It is neither bad, nor, in any notable way, good. It represents a fair average of work, and the grouping and style of the figures resemble the usual treatment of the subject of the Entombment with which we have been familiar in so many examples of religious art; it is not stiff or Mediæval, but is absolutely without originality or any effort at realising the subject. The other is Mr. Tinworth's "Going to Calvary," which seems like a determined and intentional onslaught upon all the received and orthdox notions of the treatment of the incidents of the Passion. Instead of the procession of Bible-picture figures which we are accustomed to see in the illustration of such subjects,—figures devoid of any human or every-day character, and only appearing like so many pious abstractions,—we have a group in which there is evident the intention of realising the incident as it may have actually happened, in a composition in which there is not only realism and character, but even touches of a grotesque humour such as would appear almost shocking, no doubt, to many of those who have been accustomed to contemplate such subjects entirely from the point of view of piety and edification. We have as a background to the composition the crowd of spectators kept back by a railing, among whom are the women whose lamentations are mentioned in the narrative, and a good many priests, conspicuous by their large head-dresses. In the centre of the composition Christ turns to console the women. In front walk the two thieves, the difference in whose character is carefully made out; the penitent one has evidently those who still care for him, for a woman among the crowd throws her arms round his neck in an agony of grief; the other marches doggedly on with an insubordinate expression of face, and is apparently sharply admonished by the soldier immediately behind him. There is also some apparent connexion between this group and two of the spectators, one of them a priest, between whom a violent altercation is going on, which seems coming to blows; on the extreme right a mounted centurion cranes over his horse's neck to see what the disturbance is about. Behind, on the left, two of the soldiers have seized upon Simon, the Cyrenian, a simple-looking old man, whose compulsory service in carrying the cross is evidently rather a joke to them; one soldier lays hold of him half playfully by the ear. Some good people would, we suspect, stigmatise this treatment of the subject as profane; we see in it one of the few efforts which we have seen in modern art to render the incidents of New Testament history a living or life-like reality. The work is in high relief, the figures about 14 in. high; some of them seem a little stiffly modelled, and it strikes us that the feet are large in almost all cases; but the execution on the whole is very spirited, and the force and originality of the conception are remarkable. On the further side of the vestibule is a life-size group by Mr. Thomas S. Lee, in terra cotta, of the "Death of Abel,"—the work of a young sculptor, still, we believe, a student at the Academy,—in which we again see the attempt to give a realism to a Scriptural subject. The dead figure of Abel is supported by Adam and Eve; the latter, a fine and powerfully-modelled figure, places her hand under the head to support it, an action which serves to draw the attention to the helplessness of death in the other figure, and has a pathetic meaning, as it shows this helplessness first practically discovered by the mother. Adam kneels looking into the face of his dead son with intense earnestness and consternation, as if to pierce the secret of this new sorrow. This is, in many respects, a fine and thoughtful work, both in conception and execution. The only other work in the vestibule which can be said to be of importance in a high-art point of view is Mr. Armstead's large medallion panel of David slaying the lion,—"The Courage of David" it is entitled,—a decorative panel to be placed as a memorial in the Guards' Chapel in St. James's Park. This is a work in low and flat relief, in a style recalling the school of Donatello; the figure is a very fine one, and the composition very cleverly contrived so as to appear naturally to fill the circular form of the panel; but the defect in it is that David, who is actually rending the lion's jaws (much as the old painters represented Samson in their designs), does not seem to be putting forth any exertion over this tremendous task; and there is no indication in the Biblical narrative that the youthful son of Jesse was a muscular athlete who had "slain the lion and the bear" by pure physical force; the design at once suggests Samson, and does not suggest David. Otherwise, it is a fine work with some special characteristics of sculptural treatment which give it interest. Among the busts, which as usual form a rather mixed assemblage of heads round the vestibule, is an able and forcibly treated marble of "General Sir Arthur Cotton," by Mr. Hamo Thornycroft, which is noteworthy as being an agreeable contrast to the over-finished and smoothed-out style which seems usually to be considered proper to a portrait bust. Some medallion busts in low relief, a very agreeable manner of modelling for portraiture, are to be noticed; the terra-cotta "Portrait of a Lady" (1514), by Mr. C. H. Mabey, shows a good deal of character.

In the vestibule the most prominent work is Mr. Brock's "A Moment of Peril," an equestrian group, where the horse is thrown violently on his haunches, and partly falling on one side in the effort to escape from a serpent which has entangled the the hind legs of the animal in its folds, and which the rider is trying to kill with his spear. The attitude of the horse, a very difficult one, is very successfully grappled with, and this is what mainly makes the interest of the work. Mr. C. B. Birch's life-size bronze of young Lieut. Hamilton endeavouring to make head against the assailants on the Residency when General Cavagnari was killed is of unusual interest as a commemoration of a brave man, and as an attempt to embody in sculpture a subject of present interest in modern life. The selection of the material was a wise choice; the subject would hardly have done in marble, but in bronze the arms and accoutrements do not strike us as incongruous with the conditions of sculpture to the same extent. The attitude of the English officer is full of energy, the head very fine, and he is well contrasted with the figure of the fallen Afghan at his feet, who brandishes his long, pointed, and serpentine knife in his death-struggle. At the commencement of the numbers in this room, is Mr. Lawson's figure of "Daphnis," which disappoints one after his "Callicles" of last year. It is a naked youth with a pipe, whose figure does not strike us as very fine, the head seems a little large, and the upper part of the legs rather thin and stiffly modelled; nor does it suggest any special feeling or expression. Mr. Lawson has done better things than this, certainly. Mr. MacCarthy's "Robert Burns and Highland Mary," a life-size marble group, shows a good deal of feeling and tenderness in the expression of both figures, the girl especially; the face of Burns, however, is more regular and more handsome, and at the same time less characteristic, than that of Burns really was. The girls of his neighbourhood used to say of him that "Robbie Burns" was irresistible so long as you opened your ears and closed your eyes. The poet's head is in fact more one for a painter than a sculptor, as its really striking feature was in the piercing dark eyes, which were everywhere remarked on, but which, of course, sculpture cannot express. The "Daphne" of Mr. C. Lawes recals French sculpture in its style and feeling; the transformation to a laurel has already begun in the lower extremities, and the leaves and sprigs climb up and begin to cover the body: this is a treatment which has a semi-grotesque and unsatisfactory effect. At the same time, the upper part of the body and the head are very fine; the head is thrown on one side with an almost gasping expression of fear and bewilderment; the arms, thrown up behind the head, are very finely modelled. After this we come on a good many works in which there is good intent, but very unsatisfactory performance; Mr. Montford's "Iphigenia," for example, has a serious intent, but is feeble in execution, and devoid of character; and Mr. Hamo Thornycroft's "Artemis" is only like numbers of other Diana statues. Mr. Montague Handley's "Giotto," as a shepherd boy endeavouring to draw on a stone, is a work with a good deal of interest in the fine expression of the head,

boyish and yet earnest, and the whole figure is very carefully modelled. There are two bust portraits of eminent actresses; that of Mrs. Bancroft, by Count Gleichen, remarkably successful and one of the best busts in the Academy; and that of Miss Ellen Terry, by Mr. Brodie, a very agreeable bust, but not a very characteristic likeness; the face has been to some extent conventionalised with the view of gaining more classic and sculpturesque character, but to the impairing of life-like effect. Mr. Bruce Joy's sitting statue of the late Chief Justice Whiteside has a great deal of force and dignity, though the features of the learned judge are decidedly not happily suited for sculpturesque treatment. Of Mr. Boehm's colossal equestrian statue of Lord Napier of Magdala it is difficult to judge fairly in so confined a space; but we must candidly confess that we cannot discover anything remarkable in it except its size. His figure of "Lord John Russell" (the title is thus given in the catalogue) is very expressive as far as the head is concerned, but the figure conveys the impression of a tall man, whether intentionally or not we cannot say, but if so, it is a mistake; the object of a portrait statue is to represent the man as he was, not as a sculptor thinks he should have been.

Among the numerous busts in the sculpture-gallery, we may pick out "Portrait of a Lady" (1597), by Mr. G. Onslow Ford; "H. Hubert, Esq.," by Signor Fabbrucci, and Mr. Boehm's "Professor Ruskin," a very clever bust, and, in a certain sense, a good though not a pleasing likeness. Miss Alice Chaplin's "Feline Wrestlers" is a remarkably clever study of cats, a humble subject to conclude our notice with, but no one will dispute that in art a good cat is better than a bad heroic statue, however ambitious in intention.

## HISTORICAL AND ANECDOTIC PICTURES IN THE PARIS "SALON."

A Paris *Salon* is never without in a large number of historical and anecdotic subjects: this year, however, there is not so large a number as usual, though there are quite enough to try the average visitor's historic recollections. There are, of course, numerous familiar incidents and famous historic characters represented. M. Bastien-Lepage's "Joan of Arc" is one of these. M. Bastien-Lepage is at the present moment not a little justly popular, not alone on the banks of the Seine, but in London. He is still very young, a defect which, however, will soon correct itself, and which we must also, we suppose, take as an excuse for many shortcomings evident in his work. While his Joan of Arc is perhaps the best Joan of Arc that has yet been represented either on canvas or in marble, the "Maid of Orleans" remains yet to be conceived. It is in this direction that the representation of historical subjects leads, and will lead to some interesting results. The painter who prepares himself for such a task by a previous course of reading and study in the library and museum will naturally not alone be in a position to conceive his picture, but will find his mind more enlarged than it can ever be by the mere traditional repetition of the usual historical subjects. In the work of M. Bastien-Lepage, agreeable as is the picture as a whole, vigorous and original as is the treatment, apart from the defects which the technical critic cannot fail to detect, it is possible to quarrel with the painter's conception of Joan of Arc. There is in the face of the young peasant girl a more than slight suspicion of madness; nothing in the tradition attached to her name, nor in her too famous trial, points to this explanation of her conduct; her nature was rather over-wrought and nervous. Again, contemporary evidence tells us Joan was a brunette, a fact which the fire of her conduct and her physical force certainly would lead one to suppose. M. Bastien-Lepage makes his Joan a simple blonde village girl, firmly painted, who dreams in a decidedly ghostly orchard, which can only be explained by our supposing that the painter has wished to throw a "local colour" into all the surroundings of his heroine. The figures of the "voices," which struggle through the branches *behind* Joan, are open to serious criticism; the dreamy conceptions of the peasant girl should never have found substance in painting; her "voices" were mere hallucination. Joan's story is too well known to require a vivid representation of the mysterious sounds which the Lorraine girl heard calling her to drive the English out of her country. But the sterling qualities of M. Bastien-Lepage's work will doubtless gain for him, if not this year the much-coveted "Prix du Salon," at least a high recompense. The atmosphere which the artist so successfully obtains in all his works is here again remarkable, bathing every object with transparency; the figure of the peasant girl is masterly in its treatment and exactitude, it is only portions of the landscape background which are clearly open to criticism from a technical point of view.

M. Bastien-Lepage has evidently in no way been affected by the desire so noticeable in many of his brother artists to represent scenes connected with the great events in which the present form of Government in France took its origin. Marats, Camille Desmoulins, Charlotte Cordays, Roman tyrants, Charles V., and several Bonapartes, may be found scattered about the galleries, together with a whole crowd of anecdotic and historical scenes of the stirring period which closed the last century. Perhaps we can trace in this, not only the direct effect of a failing among too many artists in the present day, a desire to please the public, but in the case of the French *Salon*, an evident bid made for official recompense. Should this prove to be the case, it would explain the unsatisfactory results obtained in so many instances. There is a large school of critics who urge that the painter of subjects taken from past history are "retrogrades"; that our every-day life affords ample opportunities to the truly historical painter. Our daily existence offers, undoubtedly, many striking incidents which more than one painter has recognised, but routine and the public require the historical painter to choose his subjects from what in our school-days we looked upon as true history. So it is that modern exhibitions present two distinct classes of historical painters, each worthy of attention.

The range of subjects taken by the former of these two groups is no small one; indeed, in one case, we have represented by M. Carmon, on a huge canvas, the dramatic scene of "Cain's Expulsion with his Family," in which the painter has admirably succeeded in bringing before us the uncomfortable character of both the social and natural conditions of our planet at that distant period. From Cain, several thousand years can be easily passed over to reach the less rash depicters of a society slightly nearer our time. Greece is revived, though, strange to say, this year in no remarkable picture; a young American, Mr. Blashfield, shows no less conception of "The Deliverance of a Besieged City," a somewhat difficult subject to handle. "A Sacrifice to Æsculapius," by M. Popelin, is a charming representation of an always pleasing subject, the sacrifice of the customary cock on a delicately-sculptured altar. Rome fares better than Greece in this year's *Salon*, M. Motte's "César s'ennuie" standing a chance of receiving the "Prix du Salon." For some reason the critics have avoided the picture, but the public are not of the opinion of those too often biassed gentlemen, and the numerous incidents of M. Motte's picture invariably keep a large crowd before it. "A Roman Emperor," Vitellius, perhaps, borne along by a number of Gaulish slaves, surrounded by his soldiers, has visited the mysterious subterranean ways of some amphitheatre,—doubtless the Coliseum,—to see the Christian martyrs there confined, while above them rage, in their cage, the famished lions who are so soon to be let loose upon the prisoners; but even this sight, the hoary locks of the aged fathers, the stern dignity of the young maidens and their brothers, cannot touch Cæsar,—his ferocious pleasure is not aroused, "César s'ennuie." The details of this scene in the twilight of the amphitheatre, the emperor illuminated by a ray of sunlight, the types of the Roman soldiers, and the Gaulish slaves, are studied closely. The costume is remarkably correct, the incidents intelligently conceived; it is alone from a technical point of view that the picture can be criticised. The manner in which it is painted is essentially weak, the execution faulty, but the conception of the work is meritorious to a degree. Theatrical effect is utterly absent, the grouping is masterly, as also the management of the light and shade; possibly M. Motte was sensible enough to follow in this particular the example of one of the famous painters of the Renaissance, Piero della Francesca, and in modern times of our own Wilkie, who made use for the figures in their pictures of small clay models, which they carefully arranged previously to commencing their sketches. The influence of the recently-opened museum of antique armour, and its carefully-costumed models of Roman and Greek soldiers and gladiators, is directly traceable in more than one picture in this year's *Salon*,—a fact to which we draw attention as showing the value of such museums, doubted by many cynics. The terrible drama of Pompeii is ably recalled in a representation, by M. Lematte, of a modern fall of ashes from Vesuvius,—a picture which shows us exactly the same people as those who suffered eighteen centuries since; fatalistic, callous, superstitious, awaiting patiently before the image of San Gennaro their fate. Of M. Cabanel's classic "Phèdre" we have already spoken; and when we have referred to M. Wagrez's dramatic representation of that ever-stirring subject "Orestes" pursued by the furies, we shall have dismissed, we believe, all the more important classical subjects of the *Salon*. A good "Diogenes" (by M. Poilleux), with his antique *amphora*, which is usually so unintelligently represented as a tub, deserves mention.

We emerge at length into more modern times; we have in M. Dawant's picture a representation of the eleventh century, of which, however, a reference to the catalogue alone convinces one; the scene is the *amende honorable* of the proud Henry IV. to Pope Gregory VII., an incident of the commencement of the struggle of the papacy and the German empire, which has not yet reached its last stage. No *Salon* would be complete without the appearance of Dante; M. Courtois shows us the great poet with Virgil in the circle of the traitors; Ugolino, the unhappy Ugolino devouring in the midst of eternal ice the bleeding skull from which he is doomed to make his perpetual meal. Apart from the vulgar realistic horror of Ugolino and the skull, the figures of Dante in his purple mantle (light pink is, however, the colour that traditional manuscripts give as that of Dante's gown) and the Mantuan poet, are dramatic, the scene heroically made up of transparent green blocks of ice. The romantic story of our once powerful ally Charles the Rash, to whom Margaret of York was given as wife by Edward IV., is recalled in a solidly-painted Belgian picture, the work of M. Delperée, representing a number of Ghenters kept waiting at the door of Charles's palace at Brussels. We have more than one famous Charles in the exhibition; Van Beers gives us a young Charles V., Motley's hero; and M. Zier an incident in the life of Charles VI. of France, "the well-beloved," our old enemy in the famous wars in which Agincourt was won and our troops were in possession of Paris, where young Henry VI. of England was crowned in Notre Dame; but M. Zier's incident is of one of the periods of insanity to which Charles was a victim,—a young girl, Odette, who nursed the poor king. The other Charles is of a later period; it is Charles XII. of warlike memory; the incident in the life of the adventurous enemy of Peter the Great chosen by the Baron de Cederström (a Swede) occurred after the Swedish king's retreat across the Dnieper, when Mazeppa, the chief of the Letmanns, is offering to aid the king, who is wounded in the foot. Charles XII. is always a character who rouses our sympathy, but his selfish sacrifice of home interests to what may certainly be termed "a spirited foreign policy" will always throw over his romantic career a serious discredit. Retracing our steps to another Charles (Charles IX.), in M. Ponsan's "Door of the Louvre on St. Bartholomew's Day," we have one of the old-fashioned pieces of historic painting; we are commencing to tire a little of the subject, and the impossibility of the scene represented. M. Aublet's "Henri de Guise visiting Henry III." is more satisfactory, while it recalls incidents less cruelly familiar to the sensitive Protestant visitor. An Austrian painter, Herr Matejko, exhibits an enormous canvas, representing the battle of Grünwald; the 180,000 combatants of the famous battle (one of the most important in the fifteenth century) between the Teutonic order and the Poles, do not exactly all figure on Herr Matejko's canvas, but apparently several thousands of them are to be found there. Indeed, in this huge picture there are several capital smaller pictures.

The Dark Ages, the Middle Ages, and the Renaissance having been thus disposed of, we come to the eighteenth century and the Revolutionary period, always held in great favour by French artists; to enumerate even a tithe of these pictures in this year's *Salon* would require more space than is at our disposal. Nearly all the characters of those stirring days pass in review

before one's eyes. Marat, who figures in half a dozen pictures, alive, writing his famous Journal; assassinated by Charlotte Corday no less than three times and in three different manners, and glorified in the representation of a bust crowned in the Revolutionary days by the good market-people of the Halles; Camille Desmoulins and the famous speech in the Palais Royal garden which preluded the destruction of the Bastille; Mdme. Roland, in M. Goupil's pretty picture (a purely imaginary Mdme. Roland), with many other historical characters familiar to French schoolboys; down to the composer Pergolese, who is represented in M. Gros's charming picture as playing the harpsichord in the quiet studio of old Joseph Vernet. We have even Washington himself (a new character introduced into the *Salon*), who is represented by a French artist as taking leave of his old mother, when he is elected as the first President of the United States.

Several stirring incidents of the French Revolution are conspicuous for their merit, but few more so than M. le Blant's "Bataillon Carré," an incident in the Breton insurrection,—a square of Republican soldiers hemmed in by "the white cockades" of the scarcely armed peasantry of Brittany. M. Armand-Dumarez gives us an English subject of some interest, — young George IV. as Prince of Wales passing in review the Grenadiers (1777). We might only object that the young prince is scarcely handsome enough,—judging, at least, by our remembrance of Gainsborough's and Cosway's portraits.

Among the foreign exhibits there are in the year's *Salon* several praiseworthy pictures representing incidents of French revolutionary history. A Russian, M. Swedomsky, and a Belgian, M. Charpentier, deserve especial mention, the latter artist possessing much of the charm to be met with in Mr. Boughton's pictures; but the Spanish painters, with only one or two exceptions, seem simply to have gone mad.

Among the anecdotic pictures deserving mention is a work of no small merit by a gifted and very favourite member of the French theatrical profession, Mdlle. Sarah Bernhardt. She has profited by the lessons of her master, Alfred Stevens. The subject of the picture, "The Young Girl and Death," is thoroughly characteristic of the lady's somewhat eccentric imagination, but the colour of the whole is not unpleasing.

Fiction has, of course, been largely drawn upon. Shakspeare has inspired an original Death of Romeo, and an Othello, represented as a very much "coloured gentleman." Señor Munoz Degrain, a Spaniard, evidently attaches no weight to the researches of Mr. Rawdon Brown, of Venice, who proved that the "Othello" of tradition belonged to a family of the name of "Moro," and hence the famous "Moor of Venice. M. Gervex gives us a superb picture, suggested by some lines of Victor Hugo, the death of a child, a victim of the *coup d'état* of 1851. The night effect of the lamp, the lifeless boy, the old mother, the workman, the figures in the background, among whom is Victor Hugo himself, form a picture which will place the young painter high in the French school of the nineteenth century.

Numerous other anecdotic pictures we have had to pass over; but, let us not neglect to mention with commendation M. Dagnan Bouveret's "Accident," a young doctor tending a boy who has hurt his hand; nor to give a word of praise to a young compatriot, Mr. Bartlett, for his "Atelier," which represents, if we mistake not, Julian's Academy, in the Passage des Panoramas, so familiar to more than one generation of English and American students in Paris.

## THE PAINTERS' COMPANY.

THE Painters' Company have issued cards of invitation to a *conversazione* in their hall on Friday next, the 28th inst., with the view of showing to artists and others their collection of pictures, the works of artists of some repute in their day, but now scarcely known.

There will also be a series of decorative examples by some of the principal London firms, as well as other objects of interest.

**Painting on Porcelain and on Tapestry.** The fifth of the annual exhibitions instituted by Messrs. Howell & James is now open.

## THE ARCHITECTURE OF LONDON IN THE SIXTEENTH CENTURY.*

BY LAWRENCE SAYER.

"LET us take a walk down Fleet-street, Sir," remarked Dr. Johnson to Oliver Goldsmith. How this high-minded man loved to wander down this old thoroughfare, with its almost endless labyrinthian courts and passages! In the good old times it was quite the *habitué séjour* of eminent men, no doubt. Being so closely associated with the Temple, it was, in æsthetical and literary connexions, the very "elysium of knowledge." What tales of misery and wretchedness that den of iniquity, the old Fleet Prison, would relate of the past, which one of our well-known literary men has depicted so vividly! Happily, upon the demolition of the building, the laws which were so strenuous vanished with it into the dark obscurity of forgotten ages.

Towards the close of his reign Henry VII. caused to be built that magnificent specimen of the Tudor style, Henry VII.'s Chapel, at Westminster, "which formes of most curious and exquisite buildinge he and Bishop Fox first, as is reported, learned in France, and brought with them into England." (Speed's Hist. of Britaine.) It was added to the apse of the Abbey, and is approached by an ambulatory around the chapel of Edward the Confessor. The roof is composed of that very remarkable species of vaulting known as fan-tracery vaulting, which is full of exceeding grace and beauty. There is an aisle on each side of the chapel, and the bays are occupied by the stalls, which present a heterogeneous mass of elaborately-embellished oak seats, bearing decided tokens of the excellence of wood-carving craft in the sixteenth century. The misereres are very quaint and curious, each possessing a different device, some of them having a tendency to somewhat a coarse nature. Near the centre stands a richly-wrought monumental tomb to King Henry VII., the founder, who was here buried in 1509. The gates at the entrance are made in bronze, with the various orders of the Court and City upon them in perforated panels. The disposition of the carved oak and stone panels is treated with great skill and delicate workmanship. Flying buttresses, very richly decorated, are used upon the exterior, which terminate in pinnacles, or mitred cupolas studded with crockets and gurgoyles of a most grotesque character. The tomb we have previously mentioned is supposed to be the work of Torrigiano, who was the sedulous instructor of our artists in modelling heads of brickwork, which became such a prevalent feature for embellishing the exteriors of the Tudor mansions.

Upon the accession of Henry VIII. to the throne in 1509, the Tudor period of architecture was then fully developed in all its interesting beauty. Many were the fine structures which rose rapidly beneath industrious minds and hands. Alas! the despoilers have since swept away some of the many excellent examples, of which, by good chance, it is sometimes possible to discover traces in old and beautiful work. In this monarch's reign, the Tudor style underwent considerable changes, which affected numerous dwelling-houses in the city of London likewise at Whitehall, Charing-cross,—or, as it was then but, the village of Charing,—and the surroundings of Westminster, to which we shall have occasion to revert later on. This was closely followed by the Elizabethan style, which admitted the embellishments of Italian ornament, as may be seen in the designs of John of Padua. "Such palaces as King Henry VIII. erected after his own devise, do represente another kind of patterne, which, as they are supposed to excel all the rest that he found standinge in this realme, so they are, and shall be, a perpetual precedent unto those that do come after to follow in their workes and buildings of importance. *Certes*, masonrie did never better flourish in England than in his time." He was most extravagant in his tastes for splendour, evidently with the ambiguous idea of supplanting all preceding works of the kind, and we find that he caused no less than ten royal structures to be erected on the most sumptuous ideas. York-place, Whitehall, Westminster; Bridewell and Blackfriars, for the reception of Charles V.; and St. James's, Westminster. York-place was, for some considerable time, the residence of Cardinal Wolsey; but we learn that he was obliged to give it up to the king, who had expressed a desire to live there. It is supposed that Wolsey built the greater part of York House, which belief is strengthened by a passage in Storer's "Metrical History of Wolsey" (1599), in which appear the following lines:—

> "Where faithful Thames salutes the learned shore
> Was this grave prelate and the muses placed;
> And by those waves he *builded* had before
> A royal house with learned masses graced;
> But by his death imperfect and defaced."

A "White Hall" is believed to have been erected by Wolsey, and the etymology of the name arose from the fresh appearance of the building, when compared with the ancient buildings of York House. Upon Wolsey's fall, in 1529, the name of York-place was forbidden by Henry's court. We find Shakspeare alludes to this very instance, in his play of "Henry VIII.," where one gentleman is giving to two others a description of the coronation of Anne Boleyn:—

> "So she parted,
> And with the same full state paced back again
> To York-place, where the feast is held.
> 1st *Gent.*—Sir,
> You must no more call it York-place; that is past,
> For, since the Cardinal fell, that title 's lost:
> 'Tis now the King's, and called White Hall.
> 3rd *Gent.*—I know it;
> But 'tis so lately alter'd that the old name
> Is fresh about me."

At this time the king caused many alterations to be made in the palace. An Act of Parliament passed in 1536 states "that the old Palace of Westminster was, and had been long since, in utter decay, and the king had caused to be erected a large mansion-place and house; and upon the soil and ground thereof he had "most sumptuously and curiously builded and edified many and distinct, beautiful, costly, and pleasant lodgings, buildings, and mansions." And adjoining thereunto "had made a park, and walled and environed it round with brick and stone, and there devised and ordained many singular and commodious things, pleasures and other necessaries, apt and convenient to appertain to so noble a prince for his position and solace." It then set forth that all the said ground, mansion, and buildings, together with the said park, and the space between Charing-cross and the Sanctuary at Westminster, from the Thames on the east side to the park wall westward, should be deemed and designated the King's Palace of Westminster. Henry at this time prevailed upon Hans Holbein to leave his native country, for the splendour and pomp of his court, and he was certainly treated with great courtesy and respect. Holbein it was who designed the grand gate-house which was erected in front of the palace, opposite the entrance to the Tilt-yard. It was constructed of small square stones and flint boulder, presenting two different colours, both of which were glazed and disposed in a tesselated manner. Upon each of the fronts were four naturally-coloured busts standing in circular cavities; they were executed in moulded clay, and in all probability the work of Torrigiano. It was taken down in 1750, in order to widen the road. He also added a spacious gallery to the old "Plaisance" at Greenwich, which was one of the favourite resorts for feasts and debauchery. The Tudor buildings consisted principally of a ground-plan around a quadrangular area, which was approached by a lofty gateway surmounted by battlements, and more lofty angular turrets projecting from the face of the wall. This, undoubtedly, was the first innovation which crept in, and was very prevalent, as may now be observed in many of the existing examples. When they were executed in brickwork, the jambs of the doors and windows were dressed with stone. The gateway, which was centrally placed, was often ornamented with vitrified bricks, in squares and diagonals. Circular cavities were likewise used for the reception of busts in moulded clay, as exemplified in Holbein's gateway at Whitehall. Upon the walls were inserted various members of fantastic architecture, "such as supporters, cognisances, and escocheons of arms," all moulded in baked clay, and treated with great skill and artistic feeling. The clusters of chimneys were very remarkable for their richness, covered with interstices and heterogeneous patterns. There are many more examples of the Tudor period to be found away from London than in it, but as this was the principal and most beautiful style of architecture in the sixteenth century, we do not think that any words have been misappropriated, in contemplation of the preceding observations.

A strange idea existed in these large Tudor

* To which a prize was awarded by the Council of the Royal Institute of British Architects. The paper was illustrated with some sketches from Henry VII.'s Chapel.

mansions of placing beside the great staircase, communicating with the hall, small octangular towers containing other staircases. These were generally placed at the angles of the large court, and rose considerably above the roof of the building, enhancing its complete picturesqueness and beauty.

The halls were each remarkable for its highly-pitched roof, composed entirely of timber framing and worked in excellent style, supported by brackets and rafters elaborately carved. At the extreme end of the hall stood the table for the superior guests, and the large semi-hexagonal window was built at the side, from the floor up to the line of the ceiling. The glass, which was only partially inserted, bore the various arms and escutcheons of the owners. These bay-windows were largely used in this century and the preceding one, as a MS. from the College of Arms tells us relating to a feast given in the hall of Richmond Palace,—"Against that his grace had supped the hall was addressed and goodlie beseene, and a rich cupboard set thereupon in a bay window of nine or ten stages and haunces of height, furnished and fulfilled, with golde, sylver, and parcell gilt." These bays consisted of five parts of an octagon.

In the reign of Queen Mary, the hall of Gray's-inn was commenced, but not completed until Elizabeth came to the throne, 1560. It is recorded that 863*l.* 10*s.* 8*d.* was expended upon it. It is undoubtedly a very good example of these sixteenth-century halls. Panelled wainscoting runs around the lower extremities of the chamber, being surmounted by a group of well-executed mouldings. The oak-timbered roof is very fine; it is divided into six bays by seven moulded collar-beams, abutting the principal rafters three-quarters of their length; at this point of intersection there is an octagonal piece mortised and tenoned into the collar-beam, terminating with a moulded pendant. From the right of this a piece intersects another exactly opposite, thus forming a kind of depressed arch. To the left of the suspending pendant is a curved piece, which rests upon a moulded stone corbel. The screen of the hall is supported by six pillars of the Tuscan order, with caryatides supporting the cornice. The hall is lighted by an excellent louvre upon the top; it formerly possessed a dial with the motto, *Lux Dei lex Dei*. The windows bear rich cognizances of Burleigh, Lord Verulam, Sir Nicholas Bacon, the famous Judge Jenkins, and others. It possesses some good paintings of King Charles I., Charles II., James II., Sir Nicholas Bacon, Lord Bacon, and Lord Raymond, Lord Chief Justice of the King's Bench.

In Bishopsgate-street there were many grand old relics of the sixteenth century, some of which are still extant; one of these being the "Sir Paul Pindar," so called from a great City merchant of that name residing there in the reign of James I. The house was built towards the close of the reign of Queen Elizabeth. The interior of one of the rooms, upon the first floor, was very richly embellished with a panelled ceiling. The chimneypiece was formed of oak and stone, elaborately carved; upon the breast of the chimney, in a panel, was the subject of Hercules and Atlas supporting an egg-shaped globe. Immediately beneath this was a tablet representing a stag-hunt. The sides of the chimneypiece were wrought with quaint and curious figures. The lower portions of the room were covered with panelled oak wainscoting, surmounted by a richly-carved cornice. In the centre of the exterior elevation was a semi-circular window of three lights, with richly-carved panels below the sills. The window was divided in the centre by a transom, and filled with leaded diagonal casements. Upon either side of this projected a similar window. This house is the most perfect type of its kind in London.

Many of the neighbouring houses internally are very richly treated with ornament. In several of the first-floor rooms there are still extant some of the finest specimens of decorated ceilings. Sufficient of them remain to enable you to trace the symmetrical lines of harmony, composed of wreaths of flowers, panels, shields, pateræ, bands, roses, and ribands, forming the most exquisite masses of decorative treatment, uniting one with another, and resulting in a happy combination of effects. There is one particularly noticeable, and nearly perfect, consisting of a large design in the centre, illustrating the Sacrifice of Isaac. A beautiful series radiates from this to the extremities of the room. Generally, the work comprises various figures placed in multangular spaces of different sizes, the central one being the largest. The projecting ribs which enclose these spaces or compartments are likewise ornamented with bands of oak-leaves and other conventionalised forms, pendants being used at the points of intersection. The cornices are richly-ornamented mouldings.

The houses Nos. 81 to 85 in Bishopsgate-street Without are Elizabethan. Upon one of the fronts of these was placed, on a panel, the date 1590.

Still-alley, Artillery-lane, and numerous streets and courts in this locality, boasted good examples of Elizabethan houses.

The site now occupied by the Charter-house, or Chartreuse, was, in 1545, granted to Sir Edward (afterwards Lord) North. It had been previously used by the Carthusian monks for a monastery, and was now converted into a sumptuous dwelling-house. We learn that the property was again sold by the second Lord North, in 1565, for 2,500*l.*, to Thomas Howard, the unfortunate Duke of Norfolk, who used it as his principal residence, and rebuilt considerable portions of it. The existing buildings were principally erected by him. Three sides of a small quadrangle, probably an early addition to the building of the ancient monastery, are still extant. The dissimilitude in the windows and doorways vindicates the date and the many alterations which they have undergone at various periods; the joints of the brickwork are specially noticeable. The cells of the brotherhood have been unfortunately destroyed, with the exception of a few doorways. The entrance to the old hospital is upon the north side. The gateway is an interesting Tudor arch, with a dripstone or hood-mould terminating in plain corbels. Immediately above this is a shelf, supported by two lions, very "curiously wroughte." The ante-chapel is vaulted and groined in the Tudor style. At the intersection of the ribs bosses of a very rich character are employed, ornamented with roses, foliage, and shields. An equilateral arch at the east end, leading to the main chapel, is believed to be the nave-arch of the prototypical monastic church. The chapel is a Jacobean building. The present chancel is a portion of the original nave. It is square in form, divided in the centre by two pillars; "the south wall alone is part of the original church, and it is supposed that the choir extended some way to the east beyond the present chapel." "A small doorway on the right of the cloisters communicates with a spiral staircase leading to the roof of the tower," which is square, and surmounted by a heavy parapet, with a pinnacle at each angle. It is crowned with a wooden cupola resting on pillars, supporting semicircular arches. Upon the top of the cupola is a vane, representing the Charterhouse arms. Proceeding through the cloisters and a diminutively-paved hall brings us to the large oak staircase of Norfolk House, replete with rich carvings of "shallow Elizabethan trophies and ornaments." Sutton's crest figures conspicuously upon the newel-posts, which represents a greyhound's head. This staircase is 6 ft. in width, and possesses twenty-one steps. A large window in the centre of the staircase overlooks the court. Next the library is the Governor's room, a part of old Norfolk House, the Elizabethan decorations of which were of the grandest description. They were renovated in 1838, being before well-nigh obliterated with whitewash; thus this splendid piece of antiquity was saved from untimely destruction. Descending the staircase we enter the great hall. The west wall formed a portion of the old convent. It is supposed to have been rebuilt by Sir Edward North. It is further stated that the unfortunate Duke of Norfolk raised the roof of the hall higher in order to allow room for a new music-gallery. "The date, 1571, shows the time that he was released from the Tower on a kind of furlough," when he employed himself here in making such improvements as this. The carving is all done in a most careful and laborious manner. There is a small side-gallery which leads to the great staircase. The room is lighted by three large windows filled with stained glass. A portion of the top is occupied by a lantern, as we explained in the preceding remarks upon halls of the Tudor period. The chimney-piece is of later date than any other part of the building. It is carved in stone, and the idea is very peculiar and grotesque, being covered with conventional scrolls. The arms of the founder are surmounted by helmet, cognizances, and crest complete, uniquely but boldly worked. Above the fireplace is an oval entablature, with a figure of mythological type upon it. A door upon the right leads into the upper hall; compared with the others, this is a small and low room, with an ornamented stone chimney-piece, with the founder's arms carved above. The windows are square-headed. Beneath the music-gallery in the great hall is a door which opens into a stone passage. In the centre are three square-headed Tudor arches, very delicate and beautifully formed. The spandrels are filled with roses, foliage, and angels bearing shields.

We find the neighbourhood of Cloth-fair replete with interest relating to the past. As one of our learned antiquaries informs us, "There is no part of London, old or new, around which are clustered so many events interesting in history as that of the Priory of St. Bartholomew the Great and its vicinity. There are narrow tortuous streets and still narrower courts about Cloth-fair, where are hidden away scores of old houses, whose projecting eaves and over-hanging floors, heavy cumbrous beams, and wattle-and-plaster walls, must have seen the days of the Plantagenets and the earlier Tudors. There are remains of groined arches and windows with tracery, strong buttresses, and beautiful portals, with toothed and ornate archways, belonging to times long anterior to Wycliffe and John of Gaunt, yet to be found lurking behind dark uncanny-looking tenements."

The church of St. Giles, Cripplegate, suffered considerably by fire in 1545. A brotherhood had been founded there by Matilda, queen of Henry I., dedicated to St. Mary and St. Giles. The church was partially rebuilt after the fire.

In Hanover-yard, near Grub-street, stood a grand old house. The rooms, which were very spacious, possessed ornamental plaster ceilings of an extremely peculiar nature. The wainscotings in one of the rooms upon the first-floor were richly carved with flowers. The porch was surmounted by a heavy gable, supported by Ionic pillars, and in the centre of the pediments a lion was placed; the windows were wide and latticed.

Sweedon's-passage, Grub-street, had an interesting structure. It formed one of six houses which had occupied the site of an older mansion. An external staircase, composed of plaster and timber, was the means of ascent to the floors above, and it was covered with a slanting projecting wooden roof. The bases of the chimneys were constructed in stone, oak and chestnut being the timber used, and the ceilings were ornamented in the same manner as some of the former specimens to which we have alluded. In an adjoining house was an oriel window. It will be worthy of notice, to remark upon the general stability of sixteenth-century work, that the timber-work of an old house which stood in the Minories was so firmly fixed that it was found necessary to use horses to pull it asunder. The house was taken down in 1793.

It will now be seen, by our somewhat succinct description, that the architecture of the sixteenth century was replete with an interesting beauty quite characteristic of the age,—an age from which have sprung so many noble forms and ideas,—an age which saw the creation, we might almost say, of a legitimate style; anyhow, a style brought to perfection in this country. If æsthetics were but carried out with the spirit of bygone days, we should not have to lament the many modern examples which are growing day by day, piling one above another in farcical ugliness, begrimed with dirt and smoke. And if it were not such a money-making age, architecture, the most noble of arts, would predominate in a realm of elegance and taste.

---

**Prize Cottages in Ireland.**—The *Freeman's Journal* states that the Royal Agricultural Society have just issued their award of prizes for cottages. In the first class the gold medal has been awarded to the Duke of Devonshire for his cottages in the county Cork, which the judges considered to combine comfort, accommodation, and economy in a remarkable manner, being not only the best, but the cheapest. All the materials were supplied by the estate, and the cost has been found to be 90*l.* 7*s.* 6*d.* each without offices, or 100*l.* 4*s.* 6*d.* with offices. The judges pronounced the work as being in every respect of superior quality, and both in plan and execution reflecting a good deal of credit on Mr. Fitzgerald, the clerk of works on the estate. The medal for second-class cottages has been awarded to Mr. Smith-Barry for the cottages on his estate in Tipperary.

## CONCLUDING OBSERVATIONS ON PARTY WALLS.

In a previous [illegible] (p. 598, *ante*) we pointed out the nature of the first and most important class of party-walls, viz., those which the adjoining owners possess as tenants in common in undivided moieties. It was shown, also, what were the legal attributes of such walls; as, for example, how for a mere temporary destruction one owner could not bring an action against another. But before passing quite away from this class, it may be well to say a word or two on the French law, which, as we pointed out, considers all party-walls as falling within the English first-class. Party-walls proper, as distinguished from ditches or the divisions of houses which in a country such as France, where people live so much on separate floors of one large building, are very important, are treated of in eleven articles of the "Code Civil," from 653 to 663. The advantages of this kind of legal codification are that the main body of the law on this subject is succinctly and clearly set out in a way that is easily comprehended. For example, article 655 states "The reparation and rebuilding of the party-wall are at the expense of all those who have claim thereto, and in proportion to the claim of each." This enumeration, therefore, prevents any necessity for searching through judicial decisions or the dicta of text-writers, and when we apply it to a practical case, such as two owners possessing the wall, it is clear that each of these must bear half the cost of any repair. Again, article 650 states, "Every joint proprietor may cause a party-wall to be built higher, but he must alone defray the expense of such elevation, of the necessary reparation above the height of the common enclosure, and furthermore, of an indemnity against the expense caused by the additional building." This, again, is a simple sentence which any layman can understand, and the other provisions are equally plain and businesslike. The second class of party-walls, to return to our own law, is one which, as before, separates two properties, but is divided as to ownership longitudinally, one vertical half belonging to the owner of the premises on one side, the other to the owner on the other. Whether a wall is used in this manner or by two persons as tenants in common is a matter of evidence pure and simple, if any dispute arises, and as we have already seen the law favours tenancies in common of party-walls rather than such as we are now touching on. But, for example, in the old case of Matts *v.* Hawkins, tried in 1813 (5 Taunton, 20), it was decided that on the facts proved each of the adjoining owners was absolutely possessed of his own half of the wall. It is sufficient to state the nature of this second class, without attempting to labour the description, which is obvious. When, therefore, such a state of things as this is in existence, it naturally follows that each owner may do as he likes with his own half, just as he may with any other kind of property, subject, of course, to the qualification that he does not injure that of his neighbour. Of course if he pulls down all the wall without his neighbour's leave, then he must take the consequences of so doing, just as if he had knocked down the walls of his detached house. Again, it also follows that in such walls as these, subject to practical difficulties and local building Acts, one tenant may raise the height of his half of the wall, and equally also if he raises the height of the whole wall, he may be doing an injury to the property of the other owner. But it should be also pointed out that when a wall is thus divided into two independent parts, so to say, each of these parts may be subject to easements vested in the owner of the other half. Thus it may be that one half of the wall has a right to be supported by the other half, because, without such right, there could be no cause of action if by the taking down of one half of the wall the other fell to the ground. There may be various other easements, such as the right to drive nails or bolts through from one side to the other, and various burdens which are continually being impressed on property of this description. These scarcely fall within the limits of a discussion on party-walls; nor do we think it advisable to make these easements divide party-walls into different classes. It is true that Mr. Justice Fry considers the third class of party-walls to be those walls which are absolutely the property of one owner, but subject to easements in relation to property which is owned by another. These seem to us party-walls in no strict and legal sense; they are walls, the property of one person, subject to certain legal burdens, just as his house may be in respect of light or support or rights of way. Thus, for all legal purposes, there are only two divisions of party-walls, and the nature of these we have now sufficiently explained to our readers.

## FROM THE BANKS OF THE SEINE.

The complaints of the architectural profession have at length received satisfaction in the *Salon*. Two large rooms, furnished with screens, have been given up to the architectural drawings; there are more than 100 exhibitors, many of whose works consist of numerous plans and details, occupying a very large space; indeed, one is able now at last to judge of the strength of the professional show at the annual exhibition. In one particular, the usual standard of artistic and archæological care bestowed on the drawings is kept up, even if the critic may be inclined to be severe on the modern architecture. At least, the profession cannot complain, as they have done so far, of not being properly represented; and we could only wish that the energetic action which has exercised this change for the better on the banks of the Seine would lead some one to imitate it on those of the Thames.

Not long since (it will be remembered) mention was made of a proposal that some means should be adopted by the State and employers to ensure for their workmen and for agricultural labourers the advantage enjoyed by the civil servants and soldiers and sailors, of a retiring pension in their old age. It will be remembered that the proposal suggested that the workman should set aside from his wages a certain sum, which should be added to by his employer and by the State. The proposal brought before the French Chamber some days since roused some small opposition, but the chief objection that the obligatory drawback on the wages interfered with individual liberty of action, was quickly overruled, and the question has now entered an active state of progress; a committee is being formed to inquire into all the details of the case, as gathered from various manufacturers, large companies, and employers of hands. Some weeks since a deputy laid before the French Chamber no fewer than thirty-seven petitions, emanating from a large number of workmen and women of Lyons, demanding, first, the acknowledgment of their trade committees (*chambres syndicales*), and, further, the formation of a fund which should protect them against the casualties of sickness, want of work and old age, "in order," the petition urged, "that those employed in industry, commerce, and agriculture shall be placed in the same position as the functionaries of the State who benefit by a system of which we demand the extension."

In the Paris building world no small interest has been roused by a recent decree of the Prefect of the Seine regarding the revision of the tariff of the prices of building materials, termed in France the *série*. This *série*, to which reference has been made in these pages, is an official document in which are marked the current prices of all building materials, wages, &c. From time to time the *série* has to be revised, and at the present moment this revision is occupying the attention of a delegation of the various branches of the building corporation. It would appear that the *série* is intended to be regarded strictly as an official document regulating the charges of contractors for Government and municipal buildings; but custom has taken it as the scale in all private transactions. The prefectorial decree above referred to, and published in a recent number of the *Bulletin du Ministère des Travaux publics*, commences by declaring the irregularity of this action. The decree further explains the necessity that has been expressed for the revision of the tariff, and appoints a commission to investigate the question, composed of a president and director, five engineers and four architects belonging to the administration, two architectural controllers, four other architects, delegated, three by the Société Centrale des Architectes, and one by the Société Nationale. There are to be nine under-commissions, in which will take part four workmen of each branch of the building trade,—bricklayers, stone-dressers, squarers, plasterers, &c.; paviors, tilers, plumbers, &c.; carpenters, joiners, parqueters; locksmiths, painters, glaziers, gilders, &c. The resolutions of these under-commissions will be revised by the central committee. The labours of the special commission are to be terminated by the 1st of June next. It will be seen how completely the question will be considered, and it can be understood how much disputation and uncertainty such a tariff will avoid.

That the transactions of the municipality are important enough to require such a system is clearly shown by a perusal of the minutes of a recent meeting of the Paris Municipal Council.

## PROPOSED ENLARGEMENT OF THE HANWELL CEMETERY.

The Kensington local authorities contemplate making a considerable addition to the Hanwell Cemetery, and are at present engaged in negotiations for the purchase of a quantity of land to carry out the object. At the last meeting of the Vestry, the Parliamentary Committee recommended that the Vestry approve the purchase of thirteen acres of land from Mr. Sharpe, by the Burial Board, for the sum of 13,500*l.*, provided that the Board obtain the consent of the Great Western Railway Company to the construction of a subway, so as to connect the present cemetery with the land proposed to be purchased.

The Vestry discussed the matter at some length, during which it was stated that the Brompton Cemetery was about to be closed, and that as the demand would come upon Hanwell, it was of considerable importance to the parish that they should come into possession of this land. In the course of the discussion it transpired that the consecrated portion of the burial-ground at Hanwell was calculated to remain open for interments for a period of twenty-five years from the present time, but that, as it was expected that an Act of Parliament would be passed in a short time by which consecrated ground would be opened to Nonconformists, the probability was that the consecrated portion of the present burial-ground would have to be disused at a much earlier period. It was ultimately referred to the surveyor to report as to whether the price for the land was a fair one.

## THE NEW LEADENHALL MARKET.

The erection of the new Leadenhall Market by the City Corporation will now shortly be commenced, and the necessary preliminary works, in the construction of temporary shops for the several tenants during the erection of the new building, are now in progress. The sale of the first portion of the materials of the old buildings, consisting of the disused hide and leather market, and the shops in Half Moon-Passage, together with the Lamb public-house, was advertised to take place last week, but it has been postponed for about a fortnight, in consequence of the temporary shops not being yet ready for those tenants of the market who will in the first instance be displaced. These temporary shops are in course of erection on the east side of the old leather-market, and are approached from Leadenhall-street. They will be utilised for the accommodation of the tenants until the new building, which is intended to be erected in sections, is entirely completed.

The designs, which have been prepared by Mr. Horace Jones, the City Architect, show that the reconstructed market will be a spacious structure. It will also be the means of opening out a much-improved and more direct communication between Leadenhall-street and Fenchurch-street, the main carriage-approaches to the market, as well as for the use of the general public, being from those two thoroughfares the intended new street between Leadenhall-street, and Fenchurch-street, *viâ* Lime-street, upwards of 40 ft. in width. The reconstruction of the market will involve the formation altogether of four new streets, intersecting each other about the centre of the market, which, at the point of intersection, is intended to be covered in by a lofty dome, of 60 ft. in diameter and 60 ft. in height, light being admitted to the market by a circular plate-glass eye in the apex of the dome. The materials of the dome will be wood and iron. There will likewise be ornamental entrances to the market from Gracechurch-street; and Half Moon-passage, the whole of the shops in which are the first to be taken down, will be made 30 ft. in width. These several entrances and approaches will lead into roofed arcades, in the Italian style, on either side of which there will be shops. All these several entrances will have ornamental elevations, the most prominent one, in Gracechurch-street, being

65 ft. in height, and faced with stone. We understand that in the new market the exhibition and sale of dogs and other live animals, except poultry, will be altogether prohibited.

## THE MIDLAND COMPANY'S NEW DOCK AND RAILWAY WORKS AT POPLAR.

THE conversion of Messrs. Wigram's ship-building-yard, at Poplar, into a large dock and merchandise depôt, by the Midland Railway Company, is one of the most comprehensive and costly undertakings which this enterprising company has yet effected within the metropolis. For many years past, the spacious area of land on which the railway company's works are now in progress was well known as one of the most extensive ship-building yards on the banks of the Thames, covering almost twenty acres. It was purchased by the Midland Company at an outlay of nearly 100,000*l.*, on Messrs. Wigram relinquishing the ship-building business. During the last two years some hundreds of artisans, labourers, and excavators have been employed in converting the site for its future intended purposes, the works consisting of a dock and quays, with dock-gate entrances from the Thames, together with locks; also railway lines intersecting the area of the depôt, which is connected with the London and Blackwall Railway by a branch line, forming a junction with the main Blackwall line a short distance from the Poplar Station. There will be immense blocks of warehouses in connexion with a network of rails for the accommodation and stowage of railway trucks and wagons. In carrying out the works an enormous amount of excavation has been necessary, not only in order to form the water area of the dock, but also for the foundations and deep basement of the warehouses, as well as for the railway, which is brought into the depôt on an ascending gradient from the low-level of the Blackwall line. This branch line has already been completed, with the exception of the laying down of the permanent metals. After leaving the Blackwall line the branch is carried under Brunswick-road, which runs parallel with the depôt in the direction of the Thames, this thoroughfare crossing over the branch by a brick and iron bridge, containing two openings, about 24 ft. in width each. Passing under this bridge the railway enters the depôt, intersecting it about the centre, and is continued in a southern direction, on a rising gradient, until it reaches the high-ground level of the depôt and the quay-space surrounding the dock. The retaining walls on each side of the railway are faced with yellow brick, and have Staffordshire blue brick copings. The dock, which has also already been formed, occupies a large space on the north-east side of the depôt. It is upwards of 25 ft. in depth from the level of the quays, the dock-walls being faced with blue Staffordshire brick, and having massive blocks of granite for copings. The lock is also in an advanced state towards completion, and a coffer-dam is at present in course of construction, preparatory to the erection of the river-wall of the dock and entrance-gates. The warehouses will occupy a spacious area on the north-west side. The excavations for the foundations and basement portion of these intended buildings are finished, and the basement-walls, like those of the dock, are faced with blue Staffordshire brick. The ground-floor of the warehouses will be strictly fireproof, as well as all the several floors above, the ground-floor being composed of iron girders and plates, and vaulted brickwork, resting on massive iron columns in the basement, at present in course of erection. It is estimated that upwards of 8,000 tons of iron will be used in the construction of the warehouses and sheds, and already there is an immense quantity of this material on the ground.

Although a heavy amount of work in connexion with the depôt has so far been accomplished, the magnitude of the undertaking is such that a considerable time must yet elapse before it is entirely completed and ready for the business of the company. The chairman of the company, referring to the subject at the recent half-yearly meeting of the shareholders, observed that the works would take some time to finish, perhaps a year or two, and the shareholders must be aware that the undertaking was likely to be attended with a considerable cost, inasmuch as they must have suitable warehouses, and appliances of every kind for dealing with the traffic which they hoped to bring a long distance to the dock. It was not only that they would have a dock for ships to come into, and lie alongside the quays, but that by means of the dock they would be enabled to ship every description of merchandise into barges, to be thence conveyed alongside the vessels in the several docks and in the river for ultimate shipment to all parts of the world. They hoped to be able to ship large quantities of coal, and Manchester and other goods, when the works were completed and ready to receive traffic. It is stated that the cost of the works, when finished, will not be less than 250,000*l.*, exclusive of the price paid for the land.

The works are being carried out under the superintendence of the company's engineer, Messrs. Merritt & Ashby being the contractors for some portions, whilst the company themselves are executing the remaining sections.

## THE FULHAM NEW INFIRMARY.

THE Fulham Guardians have arrived at a decision as to the erection of an infirmary unconnected with the workhouse. A short time ago the Board had before them plans submitted by Mr. J. G. Hall, architect. Mr. Hall submitted alternative plans, the first plan providing twelve wards, each capable of accommodating thirty-four patients, the estimated cost of which was 39,800*l.* The second plan was for the erection of an entirely new building near the Margravine-road, which would permit of the enlargement of the old workhouse in compliance with the demands of the Local Government Board, by using the present infirmary. The estimated cost of carrying out this plan was 50,130*l.* The Guardians favoured the adoption of the last-named plan. At the last meeting of the Board, however, a report was presented by the clerk of the steps taken to erect an infirmary distinct from the workhouse, in accordance with the request of the Local Government Board. The report stated that a committee of the guardians had been appointed, who had retained the services of an eminent architect to prepare provisional plans. They had also opened negotiations with the Vestry of St. Dunstan's, the freeholders of a piece of land adjoining the Fulham Workhouse, for the purchase of that land, and a letter was now read from that vestry offering to sell the land at the valuation price of 1,600*l.* The offer was accepted, and the further arrangements for erecting an infirmary on the site were left to the committee.

## OBITUARY.

*Mr. T. D. Baker*, architect, of Kidderminster, has just died, after an illness of only a few hours' duration.

*Mr. Thomas J. Oddy*, formerly Assistant Surveyor to the Corporation of Brighton, and subsequently engaged in building speculations on his own account, committed suicide on the 11th inst. by throwing himself under a passing railway train. He was fifty-three years of age. The coroner's jury returned a verdict to the effect that the deceased destroyed himself whilst in an unsound state of mind.

*Karl Heinrich Hermann*, historical painter, died at Berlin on the 30th ult. He was a member of the Royal Academies of Arts at Berlin, Munich, and Dresden. He was a native of Dresden, and a pupil of the Academy there, subsequently moving to the Academy at Düsseldorf, under Cornelius. He was associated with Götzenberger and Förster in painting the frescoes of the Aula at Bonn. Later on he accompanied Cornelius to Munich, where he executed in fresco several of the master's cartoons in the Glyptothek and the Ludwigskirche.

*Michael Wittner*, landscape and historical painter, died on the 9th inst. in Munich, whither, though settled in Rome since 1828, he had of late repaired every spring to execute a series of frescoes in the church of Illmunster. He was seventy-eight years of age.

**The Guildhall Library.**—The Library Committee of the Corporation of London, giving effect to a resolution of the Court of Common Council, have directed that on and after Saturday, June 5, the free library, reading-room, and museum at Guildhall shall remain open on Saturdays until the same hour as on other days,—from ten in the morning till nine at night.

## THE NEW JEWISH SYNAGOGUE IN FLORENCE.

THE synagogue now being built in Florence, and the exterior of which is nearly completed, forms a prominent feature in the city. It is erected, by order of the Jewish University, with funds left ten years since for the purpose by the Cavalier David Levi, a well-known banker of Florence. A committee of architects, consisting of Professors Falcini, Treves, and Micheli, gave the artistic conception of the building, and directed the carrying out of their designs; and to them is due principally the merit of the work, assisted by the engineers Cioni and Rossi.

The edifice stands isolated on a somewhat large and open area, the façade facing the west looking towards Via Farini, near the Piazza d'Azeglio, from which it is separated by a large garden enclosed by iron railings. The rear of the building, looking east, stands a few yards from Via San Ambrogio, with dwelling-houses and the old street, Via Palestri, flanking the other sides.

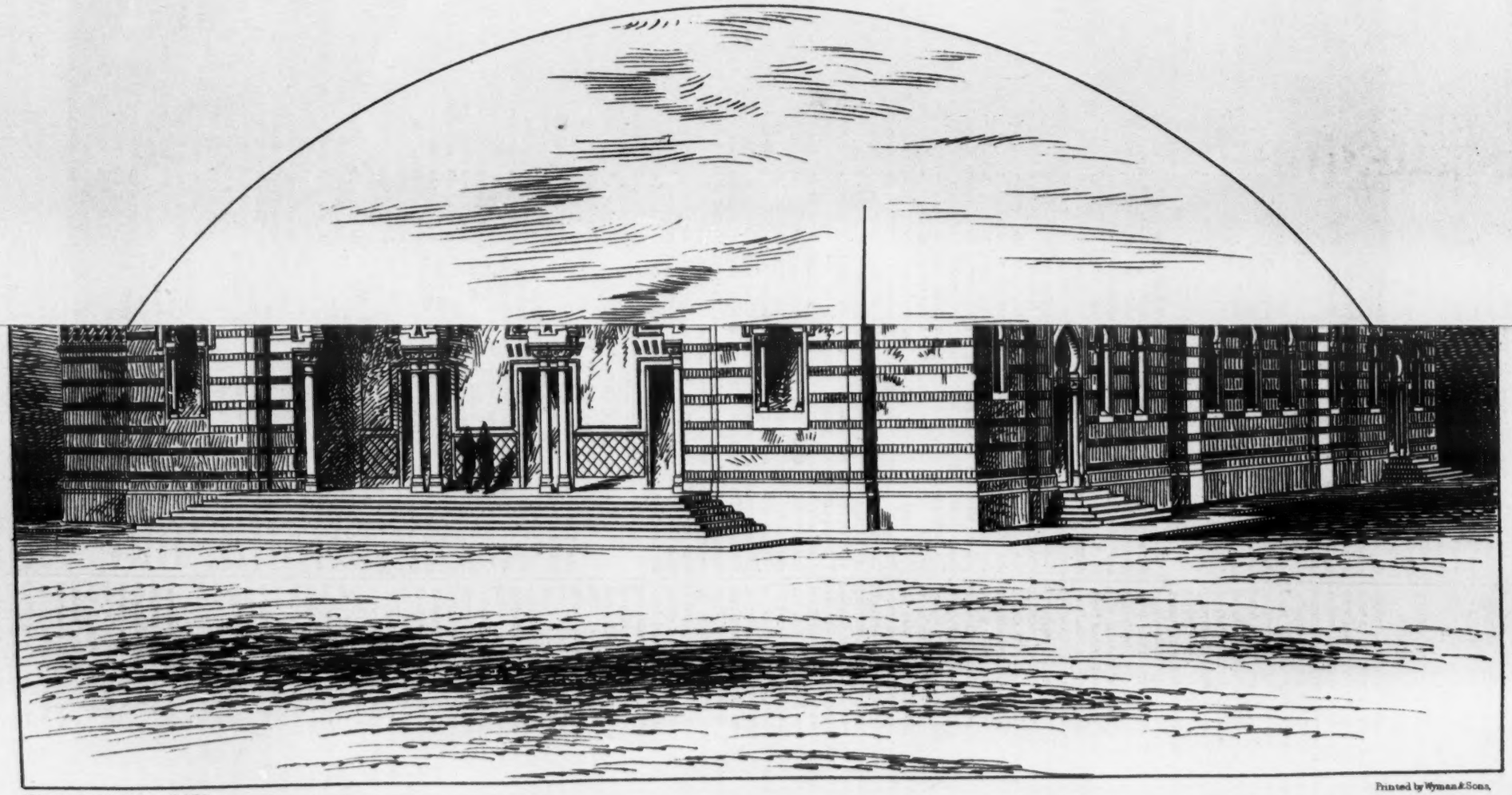
The building in style is adapted from the Arabic and Moorish monuments of Egypt and Spain, modified to suit the present time, custom, and locality.

The façade, furnished with a Moorish portico, has two small towers at each side attached to it, crowned by two small cupolas. Over the portico, covered to form a terrace, rises the main central body of the edifice, composed of a first floor, with three double narrow windows, and above one large window with three lights and two lateral of one light only to each, surmounted by an arch, from the crown of which rises a marble tablet, with the laws of Moses inscribed thereon. The two sides correspond with the front, having each the great arch, and on the façade of each nine windows, the fourth—the apsis—differing only from the other three by the domed shape of its covering. From the four arches rises the grand central cupola, resting on a base pierced by sixteen lancet windows, resembling that of the tomb of the Caliphs in Cairo. The exterior surface of the building consists of alternate horizontal stripes of travertine from the Colle Pal d'Elsa, like that of the facade of the church of Borg Aguissanti, and red granite of Assisi, the latter employed for the first time in Florence.

The coverings of the roofs of the three arches are formed of lateral tilings, while those of the apsis, the grand central cupola, and the small cupolas of the small towers, are of copper. The decorations are of copper gilt. The columns of the portico and of the side doors are of red granite from Lago Maggiore, those of the windows of the red stone from Assisi, and the capitals of the columns of white marble. By means of the three doors corresponding to the three arches of the portico the vestibule is entered, which cuts transversely the whole of the front of the building, with a door at each end for the entrance of the women. These, according to the Jewish custom, are ingresses to the galleries for the separate use of the women. In the vestibule itself are the marble basins for ablutions of the hands. Glass doors lead to the side corridors, and give ingress to the Temple. The galleries are supported by double pillars of granite, with marble capitals, like those of the portico. Four columns rise in the centre to support the circular base of the cupola, the base or ring being pierced by sixteen windows. The light proceeds from a rosette in the centre of the cupola, and from the sixteen windows in the base, and from the lateral windows of the galleries and ground-floor.

The whole of the interior space is for the service of the faithful, except the apse, raised a few steps above the floor of the building, and which will be set apart for the tabernacle.

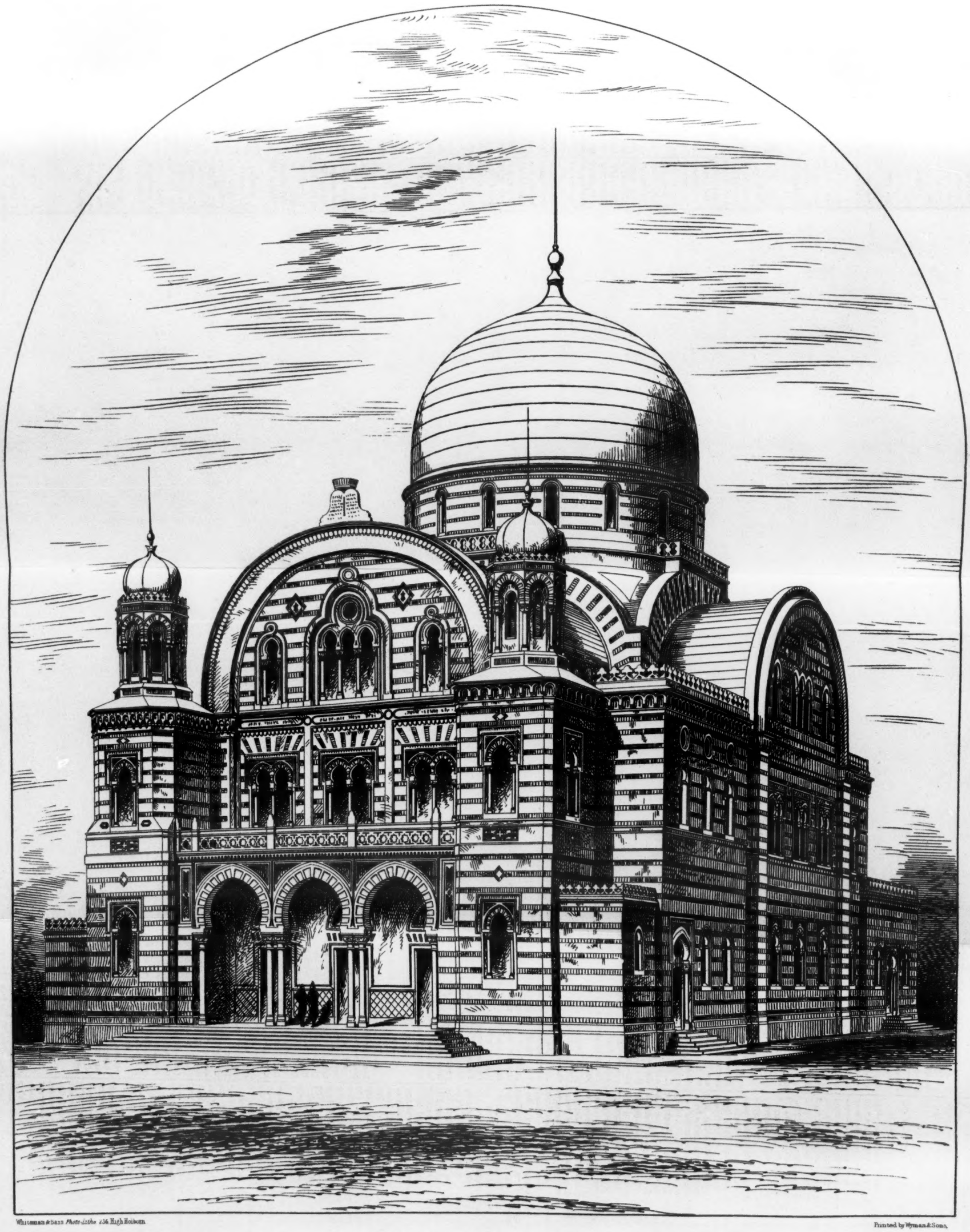
The decorations of the interior are to be polychromatic, from arabesque designs and tracings taken from Arabia and Spain, the whole maintaining a strictly Oriental character. At the sides of the apse are a "confraternity" and sacristy. At the north-west angle of the temple, and completely isolated from the rest of the temple, the dwelling of the custodian is placed, so cleverly arranged under the roof that the æsthetic effect of the monument is not deranged, and to which access is had by a small staircase at the north side. The temple will be lighted by gas, warmed with caloriferes; nothing will be wanting to the perfect finishing of the whole edifice.



Whiteman & Bass *Photo-Litho.* 136 High Holborn.

Printed by Wyman & Sons.

THE NEW JEWISH SYNAGOGUE IN FLORENCE.



Whitman & Bass *Photo-Litho* 136 High Holborn

Printed by Wyman & Sons.

THE NEW JEWISH SYNAGOGUE IN FLORENCE.

NEW SYNAGOGUE BRUSSELS: INTERIOR VIEW.

## THE NEW SYNAGOGUE, BRUSSELS.

THE new synagogue at Brussels, an imposing building, rises in the lengthened Rue de la Régence, leading to the new Palais de Justice, the latter one of the most important constructions of gigantic proportions of which our time has witnessed the erection. The original estimates for this wonder of architecture had to be doubled five or six times, and yet the copper cupola, which alone will cost as many millions of francs as were originally intended to be spent for the whole range of buildings, has not been even commenced.

The Israelite consistory of Brussels have gone to work in a more practical and more business-like manner. When the new synagogue was covered in, they, taking into account the additional expense, made up their minds at once to dispense with the cupola. "Times are bad," they said, in reply to the modest representations of the architect that the cupola was the indispensable conclusion of a building erected in a severe Byzantine Romanesque style. "Why the extra expense? Inside the synagogue the cupola would not be noticed; nor yet in front, the building rising close to the pavement, without any forecourt; consequently its absence would be seen only from a distance." In consequence, only two Tables of the Law rise into the air, conveying a rather comical impression in their position between the two turrets flanking the principal building.

This is the only peculiarity of the Brussels synagogue, which resembles the usual style of Jewish places of worship. We give an illustration of the interior; the moment is chosen when a service is going on, imparting to the picture a certain degree of reality, and showing effectually the division and arrangement of the building, which is decorated in the Romanesque style. The scene represents the celebration of the Jewish New Year's-day, the moment chosen being the time when the precentor elevates the rolls of the Law, and the choir, accompanied by the organ, chant the Hallelujah.

New Year's Feast (Roshachana, the beginning of the lunar year, the usual Jewish reckoning), next to the Day of Atonement (Your Kippour) the most important of Jewish holidays, is a time for reflection. The orthodox Israelite is enjoined by the Pentateuch and the Talmud to look inwardly on this day, to judge himself, and, entirely forgetting for the time everything concerning human affairs, to endeavour to become worthy of the forgiveness of his sins on the Day of Atonement, eight days later. "Know thyself!" This motto, which shone forth from the entablature of the Delphian temple, and which Socrates with preference repeated and impressed upon his disciples, corresponds to the meaning attached to the Jewish New Year's Feast. On this day, as on Your Kippour, the leaders and the orthodox, as well as the women, wrap themselves in white funeral shrouds; but the number of those who still adhere to this time-honoured custom is getting smaller from year to year. It is the same with the buildings. The synagogue is subject to the vicissitudes of change, fashion, and the levelling force of progress.

The nave of the temple, with its low aisles, is divided into three sections, the closed vaults of which are supported by four groups of columns, and leads to the hemicycle surmounted by the gilded semi-dome, which receives the light from five windows. The latter contain stained glass, representing attributes taken from the older Israelitish cultus. The Ark of the Covenant, with the Tables of the Law, is a *chef-d'œuvre* of modern wood-carving. Doubly turning stairs of stone lead up to it. The praying-desk and the eight-branched candlestick have been placed before the sanctuary. A Byzantine lamp in copper, containing the everlasting light, hangs before the ark.

Above the aisles, formed by a series of six arcades, is the gallery for the women, the Israelites in their worship separating the sexes strictly. There is also a women's gallery over the entrance; still higher above the latter are the organ and the choir.

The building has been erected by voluntary contributions of the Jewish community of Brussels; but the state, the capital, and the provinces have contributed at least a third of the total cost. The synagogue forms one of the most successfully carried-out buildings of modern Brussels.

## THE CHAMPION HALL ESTATE AT SYDENHAM.

### SALE OF BUILDING SITES.

AMONGST the several estates in the suburbs around the metropolis which are from time to time being converted to building purposes, is one at Lower Sydenham, called the Champion Hall Estate, containing between 14 and 15 acres, which has just been laid out for building upon. Several streets, 40 ft. in width, intersect the estate, and the total number of building sites is 250, several of the sites having been laid out for villa residences, with garden grounds. The buildings on the east side of the estate, facing the road leading to Bromley and Lewisham, will consist chiefly of shops, the remaining portion being laid out for private dwellings, each having a frontage of 16 ft., with a depth of from 70 ft. to 100 ft. One of the plots, having a frontage to the high road, and a return frontage of 83 ft. to one of the new roads on the estate, has been reserved for a tavern. In addition to the portion of the estate laid out as above named, one part of it, at the south-west side, about three acres in extent, has been purchased from the freeholder, together with the large mansion standing upon it, which, it may be stated, was erected many years ago by Mr. Rowland, of macassar-oil celebrity. All the sites on which dwelling-houses are to be erected were likewise sold some time since.

The second portion of the sites, containing forty-five plots, was sold last week at the Greyhound, in Sydenham, by Messrs. Stuart Barker & Son, when there was a large attendance of persons connected with the building trade. The property was described as having frontages to the high road from Sydenham to Forest-hill and Lewisham, and the new roads leading therefrom, offering special advantages to those desirous of building for investment or occupation. On the property being offered there was a great demand for the several plots, the whole of which were readily sold at prices varying from 60*l.* to 80*l.* each, the tavern corner plot, containing an area of about 2,800 superficial feet, realising 305*l.* The total proceeds of the day's sale amounted to 2,850*l.* The third portion of the plots will shortly be sold. In the meantime building on the estate will be in active operation during the approaching summer.

## BRICKS AND CONCRETE FROM SLAG.

THE disposal of the enormous output of slag or scoria from blast-furnaces has always been one of the serious difficulties of the iron trade. Taking an average of all the districts in England, for each ton of iron made, 25 cwt. of slag is produced, and from the official returns of last year of the iron smelted, no less than 8,000,000 tons of slag were produced. The space occupied by this mass, when loosely tipped, is something like 170,000,000 of cubic feet, or nearly twice the size of the Great Pyramid, whilst the bulk of the iron occupies only one-sixth of the same space.

A valuable paper on the utilisation of this material was read at the Society of Arts last week, by Mr. Charles Wood. In describing the manufactures carried on at the Cleveland Slag Works, Mr. Wood said the most important production, and the one which consumes by far the greatest quantity of slag, are concrete-bricks, known in the market as slag-bricks. These bricks are made from the sand produced by the slag-sand machine [described]. The sand is dropped from the railway wagons into hoppers, or depôts, at the works, whence it is filled into large barrows, and is taken up a hoist to the top of the building, and tipped into a hopper, which supplies a measuring apparatus. Here it is mixed with a certain quantity of selenitic lime (General Scott's patent), with an addition of iron oxides; it then passes into the brick-press hereinafter to be described. The bricks are taken off the presses by girls, placed upon spring-barrows carrying fifty bricks each, and removed to air-hardening sheds; here they remain a week or ten days, after which they are stacked in the air to further harden, and at the expiration of five or six weeks they are ready for the market. [Specimens of these bricks were shown.] We here have, then, the curious anomaly of bricks being made without burning, and of a wet season being favourable to the hardening process. The bricks thus produced are very tough; they do not split when a nail is driven into them, and are easily cut; they do not break in transit, and the frost has no effect upon them. According to a certificate received from Kirkaldy's testing works, some of these bricks, taken from stock three years old, carried a pressure of 21 tons before crushing, whilst others, only four months old, crushed with nine tons pressure, showing not only great toughness, but also that they greatly improved by age. There are now two machines fully employed, making about 130,000 bricks weekly, consuming 250 tons of slag-sand, and 30 tons of selenitic lime and oxides.

The preparation of this selenitic lime forms a necessary branch of the business. It is made in the following manner:—80 per cent. of unslaked common lime, 10 per cent. of raw gypsum, 10 per cent. of iron oxides calcined. These are all ground together, under edge-runners, into a fine dry powder. The composition is then passed through a fine sieve, 24 meshes to the inch; it is then ready for the brick-press. To each 1,000 of bricks, 6 cwt. of this lime is used; no water is added, sufficient being held in suspension in the slag-sand to thoroughly moisten the lime; in fact, it is no uncommon thing to find a stream of water flowing from the brick-press which has been squeezed out of the sand. The loss of bricks in the manufacture is very small; in fact, after the bricks are once upon the barrows, the waste is not more than 1½ per cent. At the present rate of production, there is a consumption of slag for this one article alone of about 14,000 tons per annum. The weight of these bricks is about 30 per cent. lighter than ordinary red ones,—9 in. by 4½ in. by 2½ in.,—weighing only 2¼ tons per thousand.

Another interesting feature in connexion with these bricks is the economy in manufacture, which,—including all materials, labour, wear and tear of machinery, &c., superintendence, power, and everything except interest on capital,—does not exceed 10*s.* 6*d.* per thousand.

The following is an analysis of these bricks, made by Messrs. Patterson & Stead, and will be found worthy of notice, showing the hardening properties contained, the composition comparing favourably with the cements previously mentioned:—

| | Per cent. |
|---|---|
| Lime | 29·90 |
| Silica | 26·15 |
| Alumina | 21·80 |
| Protoxide of iron | 1·44 |
| Protoxide of manganese | 0·36 |
| Peroxide of iron | 1·97 |
| Magnesia | 5·10 |
| Potash | 0·63 |
| Soda | 0·38 |
| Sulphur | 1·00 |
| Sulphuric acid | 1·25 |
| Phosphoric acid | 0·61 |
| Carbonic acid | 2·60 |
| Total water | 9·59 |
| | 100·56 |
| Less oxygen of the lime combined with sulphur | 0·50 |
| | 100·06 |

The process of brick-making, as now carried on, is extremely simple, and, as already shown, inexpensive; but it was here that the greatest difficulties were met with. There was no machinery to be purchased that could work the slag-sand into bricks, in the state in which it arrived from the blast furnaces. In the earlier attempts the sand had to be prepared in a fine state, the result being a superior class of bricks, but of a cost so great as to exclude them from the market. The author had, therefore, to design and construct brick-presses and other machinery that could work the sand, as it came from the slag-sand machines, directly into bricks. The success of this machinery at once rescued the Cleveland Slag Company from an early collapse, but not before a large amount of money had been spent, and some two years wasted. A description of this machinery is given further on; but, in designing the press, the following points had to be kept in view, viz., unusual depth of brick-moulds, as the sand (being spongy) is exceedingly compressible; great pressure, in order to consolidate the slag, as well as great care in mixing the lime in fixed proportions to the sand,—too much lime tending to burst the bricks, whilst too little seriously affects the hardening.

The next product to be described is the manufacture of what is called slag-cement. The word "cement" has sometimes been objected to in connexion with this material, because it is generally manufactured in a wet state, and must be used within a few hours of its being made. Upon this point the author expresses no opinion, simply mentioning the fact that, in

point of strength, he finds little difference whether the materials are ground together in a dry or in a wet state. The cost of production, however, is, as nearly as possible, four to one in favour of the wet state. It is made by grinding under edge-runners for about one hour (the finer the better), 70 per cent. of slag-sand, 15 per cent. of common lime, and 15 per cent. of iron oxides, calcined iron stone, or spent pyrites.

The following is an analysis of this cement, lately made by Messrs. Patterson and Stead:—

| | Per cent. |
|---|---|
| Lime | 22·90 |
| Silica | 21·61 |
| Alumina | 19·85 |
| Protoxide of iron | 4·00 |
| Protoxide of magnesia | 0·21 |
| Peroxide of iron | 8·80 |
| Magnesia | 4·36 |
| Potash | 0·60 |
| Soda | 0·32 |
| Sulphur | 1·19 |
| Sulphuric acid | 1·54 |
| Phosphoric acid | 0·02 |
| Carbonic acid | 3·00 |
| Total water | 12·00 |
| | 100·29 |
| Less oxygen of the lime combined with sulphur | 0·59 |
| | 99·70 |

Upon comparing this analysis with that of Portland cement, and with that of the puzzolanas, it will be seen that the various hardening ingredients exist in all.

The large quantity of water held in suspension in the slag-sand is quite sufficient to make the mass in the mill into a semi-fluid state, but this water is mostly taken up in setting, as water of crystallisation. It is, therefore, necessary that the cement should be used before setting takes place. This cement is usually employed for making concrete, by mixing one part of the cement to five parts of slag-shingle. The shingle is made by the slag-shingle machine.

The shingle, before being used, is well wetted; and when the concrete is put into place, it is beaten lightly down in a soft state, until the water and cement begin to rise on the top; two days afterwards it has become sufficiently set to allow of the building boards being taken down, and at the end of a week it will be fairly hard, and will go on hardening for months. It is perfectly hydraulic, and will harden under water. It will be seen by this that it requires longer time to set than Portland cement, and is perhaps not quite so hard; but there is a remarkable toughness, which has surprised all those who have used it, and this toughness makes it valuable for heavy machinery, foundations, &c.; and, when made in proximity to the furnaces, the cost of the cement will not exceed 6s. per ton, whilst concrete made of this cement and slag-shingle will only cost 5s. 6d. per cubic yard.

These prices are absolute figures of cost, that of the concrete being arrived at after the execution of many hundreds of cubic yards, both upon the Tees Iron Works, at the new railway station at Middlesbrough, and elsewhere. The Slag Works buildings, the walls of which are between 70 ft. and 80 ft. high, are built entirely with it, the basement walls being 2½ ft. thick.

Whilst the underground walls of the Slag Works were being executed, they were twice immersed, through exceedingly high tides, with the result that this part of the building is the hardest of all; and to give an idea of the strength, the author may mention that it was necessary, about eighteen months ago, to cut two openings at different points through the basement walls, 3½ ft. wide and 6 ft. high. This employed two good workmen, with steel bars and sledge-hammers, at least four days for each doorway.

The author knows of no material at a similar cost which can compete with it, and he is satisfied that it has only to be widely known to be more extensively used. Personally, where time can be given, he employs nothing else for all heavy foundations for rolling-machinery, for which purposes, as a conglomerate or monolithic mass, it is peculiarly adapted. Slags from the furnaces making Bessemer iron are better adapted to this cement even than those from the Cleveland ores.

Mention has been made of the necessity of keeping the products from slag-sand in a damp state for a length of time after manufacture, in order to give them time to harden, or, in other words, to allow the material to absorb or take up as much water as will chemically combine with the lime, silica, and alumina; but whether this water becomes water of crystallisation, or water of hydration, or a combination of both, it is not at all certain. The author is, however, strongly impressed with the idea that water in a fixed state, more particularly in a compound state, plays by far a more important part in the setting of cements than is generally supposed. That the presence of water in a chemically combined state forms as much a constituent part of cement as does the lime, silica, and alumina, seems certain from the results of the analyses.

For instance, if Portland cement be heated to a red-hot heat, so as to evaporate the fixed water, the cement loses at once its strength, and becomes rotten. Again, with gypsum, where the water of crystallisation amounts to more than one-fifth of its bulk, if this is driven off at a red heat, we have little better than a powder left. And it seems clear that the quicker this crystallisation takes place, the quicker is the setting; and, on the contrary, as in the slag cements and the brick, the slower the water is in becoming fixed, the slower is the hardening, thus showing the necessity of keeping them damp during the process.

Mortar for building purposes is also another material supplied at the Cleveland Slag Works. It is simply made by grinding the slag sand with about six per cent. of slaked lime in an ordinary mortar-mill, and (if ground fine) makes a far better mortar than is generally employed by builders. Two years ago there was a very large demand for this material in Middlesbrough, but the building trade has so completely come to a stand-still that at the present time not much is being used. There is only one objection made to it, viz., that it sets too quickly. Mortar supplied on the Saturday, left unused, would be worthless on the Monday. As with the other slag products, its remarkable strength and cheapness combined makes it much liked by those who, in close proximity to the works, can obtain it freshly made.

One other manufacture from slag is carried on at the Cleveland Slag Works, which, although it does not consume much, is still of interest, viz., artificial stone. It is moulded into chimney-pieces, window-heads and sills, balustrading, wall-coping, and other ornamental work for builders, as well as for paving for footpaths, stables, &c. The stone is composed of two and a-half parts of finely-pulverised slag, and two and a-half parts of ground fire-brick, to one part of Portland cement; the mixture is run into moulds, and sets quickly, the articles being ready for the market in five or six days.

In works where so many special manufactures have been developed, the arrangement of the buildings,—the design, position, and working of the machinery at present used,—must necessarily have been arrived at only by hard-earned experience; and the author has thought that this paper would be incomplete without a description of the factory at Middlesbrough, with such further modification as an experience of five years' working has suggested. The buildings are constructed of slag-cement concrete throughout; the main building has four floors, the size of which is 46 ft. by 33 ft., whilst the slag-sand stores, gantry, engine-house, lime-house, &c., occupy 97 ft. by 47 ft. The slag-sand is brought from the blast-furnaces in large wooden railway-trucks, holding between 7 tons and 8 tons each, and is run up an incline by the locomotive into a gantry. The bottom doors of the trucks are opened, and the slag-sand is dropped or emptied into hoppers below. These hoppers are capable of holding about 600 tons of slag-sand, or storage enough for one week for three machines, and should be kept constantly filled. From these hoppers it is drawn into large wheel-barrows, and is taken up by a double-acting hoist to the top of the building. This hoist is driven from the main-shafting in the mill, and is worked by two belts, one crossed, the other open, for the purpose of reversing the cages. The cages can be made to stop themselves at any floor, and have a self-acting brake to prevent any movement of the cages after the straps are thrown off, the action being most simple and effectual. The sand-barrows are taken from the hoist at the top of the building, through a passage, and tipped into the hopper, which supplies the brick-presses. Selenitic lime is fed into a small hopper, by hand, from a chamber or floor above. At the bottom of these sand and lime hoppers are the measuring apparatus, which accurately measure both the lime and the sand in the exact proportions necessary. From the measuring drums, the material falls upon sifting and mixing apparatus, from which it falls through the floor into the brick-press. This press has been designed especially for the purpose, and has many new points. It is of immense strength. The pressure is obtained by two cast-steel cams, which are fixed upon a forged steel shaft, 7½ in. in diameter; this shaft, resting on bearings between two strong frames, is put in motion by very powerful double-geared spur-wheels, the first motion-shaft having a heavy fly-wheel upon it to steady and equalise the pull upon the strap. The pressure-cams act against rollers fixed upon two steel cylinders, or rams. These rams transmit the pressure to the moulds under the table. The table is circular, and contains six pairs of moulds, so that four bricks are pressed at one time, the table remaining stationary during the operation. At the same time the bricks are being pressed, two other pairs of moulds are being filled up with material, whilst the other two pairs are delivering up the four bricks already pressed at the previous revolution of the cam shaft. The bricks are pushed out of the mould by smaller pistons, which are acted upon by separate cams. The moulds are lined with changeable steel plates three-sixteenths of an inch thick, and the sand and lime are fed into pug-mills. These pug-mills are fitted with six knives each, so as the more thoroughly to mix and chop the spongy slag with the lime. The table is shifted round by a kind of ratchet motion. Immediately above the pressure-cylinders are two pressure-stops, which are held down by the heavy-weighted levers. These levers, therefore, receive the whole pressure put upon the bricks; and in case there should be too much sand getting into the moulds, they simply lift up and relieve the strain. The weights can be weighted at option, and thus form an exact gauge of the pressure upon the bricks. The moulds are generally filled so as just to lift the levers in ordinary work. The filling is easily regulated by the set of the knives on the pug shafts, which press the material into the mould and one side of the pug-mill cylinder is made to open so that the knives are accessible at any moment. The pug-mills are filled by means of measuring and mixing apparatus placed on the floor immediately above the brick press. The mixing and measuring apparatus is very simple and efficient, and works without trouble. The slag-sand is tipped into a hopper by large barrows, which are lifted up by a hoist. At the bottom of this hopper there is a revolving cylinder, with ribs cast upon it, which, revolving under the hopper, carries a certain thickness of sand, the thickness having been previously regulated to the requirements of the press. The slag then falls upon a sieve, which separates any large pieces of slag in a solid state, and at the same time allows the falling sand through the sieve to fall like a shower. The lime is fed into a separate hopper, and is regulated by a feed-roller of smaller size. The lime then passes down a shoot, which forms part of the slag-sand sieve, where it meets the shower of sand,—falling together with it,—thus getting thoroughly mixed. On the right hand side of the slag gantry and hoppers is the mill for preparing the selenitic lime. The lime, after being ground under edge-runners, is passed through a sifting apparatus, the wire of which has 24 meshes to the inch; it then falls into a hopper, is taken by barrows through a passage to the hoist, and lifted to the lime-chamber before mentioned. In a line with this mill, and parallel with the slag-gantry, are the stores for the lime, gypsum, and iron oxides, whilst behind the lime-house are the engine and boiler.

The hardening-sheds are three in number, and should be each about 100 ft. to 40 ft. The floor must be perfectly smooth and level,—this being an important point,—as an uneven floor spoils the bricks. The sheds should have plenty of ventilation, and require to be cool in summer. Great care is necessary in stacking these bricks as they come off the barrows. They are placed on edge quite close together, and stacked six in height, and when once here in position, there is little or no loss afterwards.

Mr. Frederick Ransome, M.Inst.C.E., the well-known inventor of the artificial silicious stone, has recently taken out a patent for mixing the slag-sand in its wet state with chalk, and then burning the whole together in a cement-kiln into clinker, after which he grinds it down in the same way as Portland cement. The results given are most remarkable, exceeding Portland cement in strength by nearly 30 per cent. The experiments are of so recent date,

that the author has considered it better not to give any further statistics.

A sort of concrete brick has, during the last few years, been made by the Moss Bay Iron Company (Limited), Workington, from hematite Bessemer slag, under the direction of Messrs. Kirk Brothers, Mr. Henry Hobson being the then manager, and, I believe, the originator of the process. These bricks have been made by a process differing entirely from the system adopted by the author at Middlesbrough, and already fully described. The slag employed at Moss Bay is pulverised from the cold solid slag, under massive edge-runners, which crush the material into fine dusty shingle; it is then lifted by elevators into French burr stones, and ground down as fine as sand. From the stones it passes through a worm-conveyor to a brick-press, during which about 25 per cent. of common river sand is added, with sufficient water to thoroughly damp it, without any addition of lime: again showing, in a remarkable degree, the extraordinary setting nature of the slag, after the chemical combination with the water and exposure to the air has taken place. These bricks are taken from the press, and placed under cover for a few days, when they are put out in the open air to harden. The bricks are of excellent shape, grey colour, and become exceedingly hard, as will be seen from the specimens exhibited. Large numbers of these bricks have been employed in building the Moss Bay Steel Works, and appear to be standing remarkably well. The cost, however, is very heavy, owing to the difficulty of preparing the slag, and the wear and tear of the machinery; the excessive weight also precluding the sale at any great distance from the works.

The large amount of lime, combined with the silica and alumina in the Bessemer slag, as seen in the analysis already given, quite accounts for the setting properties. With the exception of the bricks used upon the works, the author believes that there has not been any large number made, and the machinery has now been standing many months. The process is, however, again another proof, in a very interesting way, of the peculiarities of the material. The bricks continue to harden for years, and appear to arrive at a kind of crystalline fracture, which damp greatly accelerates. There is no doubt whatever that, if this slag were treated by the process adopted by the author, bricks, in every way superior to the ones just described, and, from the nature of the slag, superior, even as a building brick, to those produced at Middlesbrough, could be made.

## PORTLAND CEMENT.

AT the Institution of Civil Engineers, on the 11th of May, the first paper read was on "The Manufacture and Testing of Portland Cement," by Major-General H. Y. D. Scott, C.B., and Mr. Gilbert R. Redgrave.

The history of the early manufacture of Portland cement was involved in considerable obscurity, and the conditions which had rendered possible the manufacture of the cement now recognised as Portland, seemed to have been arrived at only very gradually. The term "Portland Cement" first occurred in the specification of a patent granted to Joseph Aspdin, a bricklayer of Leeds, in 1824. Aspdin did not appear to have made true Portland cement, nor was his mode of manufacture identical with that which had since been generally adopted. His son, Wm. Aspdin, was, however, one of the earliest makers of genuine Portland cement, and had a factory at Northfleet, trading with partners as Maude, Jones, & Aspdin. Subsequently, as Robins, Aspdin, & Co., he shared with Messrs. J. Bazley White & Sons the reputation of having been the founders of the Portland cement manufacture in the London district. The elaborate series of tests conducted for the Metropolitan Board of Works by Mr. John Grant, C.E., between the years 1859-71, might be said to have placed Portland cement in the first rank as a building material, and it had been the means of fixing and formulating the knowledge of this material. Mr. Grant's observations had been supplemented by those of Messrs. Colson, Mann, and others, and there now existed a vast store of information respecting the use and treatment of Portland cement. Mr. Henry Reid had also thrown much light upon the manufacture and production of this cement.

The raw material suitable for the manufacture of Portland cement existed in great abundance in nature, and, with proper care, a high-class Portland cement might be produced in almost any country. The mode of mixing the chalk and clay generally employed in England for the manufacture of the cement was not so systematic as could be desired. The old-fashioned plan was to wash together, or incorporate, the chalk and clay with a large excess of water in a wash-mill. The resulting milky fluid, or wet slip, was then run into a series of shallow reservoirs or backs, where these ingredients subsided, and the clear top-water was gradually drawn off from the surface. After remaining for six or eight weeks in the backs, the slip, which had attained a pasty consistency, was removed in barrows to drying floors, where the remaining water was expelled by bottom heat, conducted in flues. The dry slip was then calcined in kilns with inter-stratified coke, and the clinker which was produced was ground into a fine powder, and was ready for use as Portland cement.

The modern plan was to grind the chalk and clay together, with the smallest quantity of water possible, and to ensure the perfect reduction of the coarse particles, either on the method of Mr. W. Goreham, by passing the wet slip through mill-stones, or, as recommended by Mr. V. de Michele, by employing a rubbing surface of metal plates which surrounded the wash-mill. In the most recently improved plan of drying, the wet slip was conducted at once into chambers attached to the kilns, and the waste heat from the calcination served to dry the next charge. This plan was invented by Mr. I. C. Johnson. Mr. de Michele had also employed the waste heat from the kiln, which involved the use of a roof over the chambers. Other plans of utilising the hot gases from the kilns had been introduced by Messrs. J. B. White & Brothers, and by Mr. R. A. Gibbons. In grinding the clinker, it was of great importance to reduce the cement to a fine state of subdivision, and to exclude all "core" or hard particles by sifting, as the hard particles might be sources of danger to the cement; at the best, they only acted as so much sand. All cement was benefited by spreading it in thin heaps on the floor of the warehouse; this operation being termed "purging" the cement.

Passing on to the subject of testing, the authors stated that, strange and anomalous as it might seem, although except in rare cases Portland cement was never used neat, or subjected to a direct tensile strain, it had been the universal practice to test the neat cement by means of tension. German cement users and producers had resolved, after a general conference, to adopt a sand test, and to employ a standard testing-machine. The sand test was made with three parts of prepared sand to one part of cement. The briquettes had a sectional area at the neck of five square centimètres, equal to 0·775 square inch. The briquettes were tested twenty-eight days after they had been made, one day being passed in air and twenty-seven days in water. The breaking-weight, in a machine of special construction, had been fixed at the rate of 113·8 lb. per square inch. The mode of preparing the sand by sifting out all the coarser and finer particles was provided for, and also the quantity of water to be employed. The authors, after due consideration of the various difficulties and objections to a change in the mode of testing Portland cement, proposed the following general tests for English cement:—1. The whole of the cement to be ground fine enough to pass through a sieve of 40 × 40 = 1,600 meshes to the square inch without residue. 2. The cement to weigh not less than 85 lb. per cubic foot, filled from an inclined plane at an angle of, say, 45°. 3. The cement, tested with three parts of standard sand, must have a minimum strength of 112 lb. per square inch in twenty-eight days, during one day of which it had been in air and twenty-seven days in water.

The second paper read was on "Portland Cement Concrete, and some of its Applications," by Mr. E. A. Bernays, C.E.

In this communication the author gave the results of his experience in carrying out the large works for the extension of H.M. Dockyard at Chatham. When these works were commenced, in 1867, so little confidence was placed in Portland cement that that material was not even mentioned in the contract specifications; grey stone lime, blue lias lime, and pozzolana being specified for all descriptions of mortar and concrete. Soon afterwards, however, it was found desirable to substitute Portland cement for the above materials. For all ordinary concrete, it was ascertained that a mixture of one part of Portland cement with twelve parts of shingle, gave a better result at the same or less cost than the concrete provided for in the specification, to be composed of one part of Warwickshire blue lias lime to six parts of shingle. The Portland cement used throughout the Admiralty works had been of good, but not of a costly, character. It was specified to weigh not less than 112 lb. per bushel, to be finely ground, and to bear a breaking strain of not less than 650 lb. on the section of a briquette 1¼ in. by 1¼ in. In a total quantity of upwards of 50,000 tons, the mean weight was 116¼ lb. per bushel; the average breaking strain of a briquette, of the above section, 773¼ lb.; and the fineness such as to allow not less than 75 per cent. by weight to pass through a sieve with 50 meshes to the lineal inch. The author, while admitting the superior value of fine grinding of cement, when combined with great weight, expressed a doubt whether in England, where a fairly good article could be got at moderate cost, it was worth while to incur the increased expense of heavy and very finely-ground cement. When used in foreign countries, where the cost of freight and transport was serious, he thought that almost any outlay on the first cost of the cement, to make it go further when mixed with sand or gravel, was desirable. The large concrete walls at Chatham had been singularly free from the horizontal and vertical cracks so often noticeable in concrete walls. The author attributed this partly to the uniform practice of turning out all cement from the bags into a shed for, at least, three weeks before using, and partly to the care taken to carry up the work in long lengths each day, instead of in great heights. His practice was to carry up the work in about 18-in. lifts only. Over the greater part of the works at Chatham, the walls, though mainly of concrete, were faced with a veneer of brickwork 3 ft. thick, with bond courses of brickwork 1 ft. 9 in. thick, passing through the walls at intervals of 6 ft. in height. At the eastern end of the works, however, the great depth at which satisfactory foundations were found, and the necessity of passing through 35 ft. of soft mud before reaching good bottom, necessitated much greater strength and consequent thickness of walls. In order to construct these without increased cost, it was decided to omit the brickwork, and build them wholly of concrete. While it was considered that, for all purposes of strength as a retaining wall, concrete made of 1 part of cement to 12 parts of shingle was amply sufficient, it was felt that concrete so made was not strong enough to withstand the rubbing of ships' fenders, boats, or vessels. Early in 1874, the author tried the experiment of facing this common concrete with a coating 9 in. or 10 in. in thickness, of superior concrete carried up simultaneously with the commoner material. This concrete was composed of 4 parts of furnace slag broken into small cubes by a stone-crusher, 2 parts of clean Thames sand, and 1 part of Portland cement. The experiment proved successful, the adhesion between the two descriptions of concrete being perfect. All the exposed surfaces of concrete walls built since that date had been so faced. The same principle had been applied to the lining of subways, culverts, penstock shafts, &c.; but, in these cases, where the face of the concrete was less liable to abrasion, broken flints had been substituted for the furnace-slag, owing to the difficulty of procuring the latter, in the locality, in sufficient quantity. For all concrete, but especially when used for facing, the author advocated a free use of water in mixing. He had never found any disadvantage from the use of concrete in a wet state.

At ordinary London rates, the author estimated the cost of concrete walls, composed of 1 part of Portland cement to 12 parts of shingle, at 7s. 2d. per cubic yard, of 1 to 9 at 8s. 2½d., and of 1 to 6 at 10s. 3d. He estimated that the timber framing added from 4d. to 6d. per cubic yard to the cost of the walls, and the facing of slag or flint about 2½d. per cubic yard on thick walls. At these rates such walls as had been built at Chatham could be constructed, including facing and framing, at something less than 8s. per cubic yard.

**Society of Painters in Water-colours.**—At a general meeting of this Society, held on the 13th inst., Messrs. Henry Wallis, Henry Moore, Oswald W. Brierly, and Samuel Read were elected members.

## GREEK SCULPTURE AND PAINTING.

SOME time ago we announced that a course of eight lectures to male and female students of University and King's Colleges, on Greek art, had been arranged for, and that Mr. C. T. Newton, C.B., Keeper of the Greek and Roman Antiquities in the British Museum, would be the lecturer.

Mr. Newton delivered his introductory lecture on the 5th inst., in the Botanical Theatre of University College. He remarked that prior to the rise of the Roman Empire, Greek civilisation had spread like a fringe along the indented shores of the Mediterranean and the Black Sea, as from the seventh century B.C. onwards Greek maritime adventure planted fresh colonies. Wherever a Greek city sprang up it was soon provided with temples, statues, and other works of art dedicated to the gods, such as theatres and gymnasia. We could trace back these monuments into the seventh century B.C. From that time onward to the Roman conquest the hand of the Greek artist was never idle. As the servant of the State, he was constantly called upon to execute works in propitiation of the gods, or in honour of public benefactors, and there was, moreover, a constant supply of work in the offerings dedicated by pious individuals. Thus, in process of time, the temples and public buildings in these cities became so many museums full of statues, pictures, and other works of art, which, being dedicated to the gods, had every possible guarantee for their safety. The accumulation of these works in course of time became something incalculable, and was only interrupted by the earthquakes which, from time to time, threw down temples and laid whole cities in ruins; or by the intermittent rapacity of greedy conquerors. In the second century A.D. many of the finest statues and pictures in Greece had been transplanted from Greece to Rome for re-dedication in temples, or the adornment of public or private edifices. But how much remained after all this spoliation we might judge from the writings of Pausanias. The age of the Antonines was an age of tourists, who were protected by the legions on land, and by the Roman fleets at sea. They were the days when sightseers visited what were called the Seven Wonders of the World, and when Roman pilgrims anticipated modern tourists by scribbling their names on the colossal Egyptian Memnon. Pausanias had great opportunities of instructing us, and he told us much that was precious; but his description of the ancient works of art was dry and unfeeling. Pliny, who in the previous century had seen all the collections of Greek art at Rome, gave us a list of celebrated artists and their works arranged in periods; but his criticism was, for the most part, shallow and superficial, and seemed to be the mere echo of the public opinion of his day. The most valuable criticisms on the ancient works of art were the incidental notices of writers on rhetoric, such as Cicero or Quintilian. Such was the aspect of the ancient world in the second century of the Christian era. Mr. Newton then invited his audience to transport themselves into the fifteenth century. If Pausanias had revisited the earth at that epoch, how little would he have found of those monuments and art treasures which had been the glory of the age of the Antonines! In Rome itself he would have seen some few vestiges of its ancient magnificence, for buildings so vast and solid as the Coliseum, the Baths of Caracalla, and the Aqueducts of the Campagna, are not so easily improved off the face of the earth. But of the palaces of the Cæsars, of the stately temples once resplendent with gold, of the theatres and basilicas, he would have seen only here and there a fragment choked up among modern buildings. Greece and Asia Minor would have presented to him an equally desolate aspect. Coasting along the Eastern Mediterranean he would have missed those famous sea marks so familiar to the mariners of antiquity. Man and nature had vied in the effort to destroy those temples, statues, trophies, which once adorned the headlands and harbours. Earthquakes and lightning, the daily corrosion by atmospheric influences, river inundations, as in the instance of the Cayster at Ephesus, and of the Alphæus at Olympia, destroyed or buried the antiques in alluvial mud, if they did not engulf them in the sea. But the ever-active agent in the work of destruction was man, civilised or barbarian, Christian or Mahomedan. Greece was plundered of its finest statues and pictures to embellish first Rome and then Constantinople. Nearly all the works thus transplanted had perished in the many conflagrations and sacks of those two Imperial cities. Mr. Newton then proceeded to speak of the rise of Roman antiquarianism at the dawn of the Renaissance, following the development of the twin sciences of Classical archæology and æsthetics from the days of their infancy down to those of mature manhood, under the guidance of men like Winckelmann, Ottfried Müller, Overbeck, Stark, not forgetting the services of the explorers of the remains of Greek sculpture, from those who gave us the marbles of the Parthenon to those who were still unearthing for us the treasures of Olympia.

The second lecture of the course was delivered on the 12th inst. Archaic Greek art was the subject. The lecturer said that the archaic period of art might be conceived as terminating just after the end of the Persian war, about 470 B.C. Its beginning could not be defined, because it was necessary to refer the earliest Greek remains we knew to the legendary times before Homer. It would be convenient to arrange all extant remains of archaic art in three great groups,—later archaic, Græco-Phœnician, and earlier archaic, which might be called pre-Dædalian or pre-Homeric. It was best to begin with the monuments of the later archaic period. The statues from the Sacred Way at Branchidæ, and the fragments of sculpture from the earlier Temple of Artemis at Ephesus, were the most instructive examples of this later archaic style, because their date could be approximately fixed to the range between B.C. 580 and B.C. 540. The metopes of the earliest temple at Selinus, in Sicily, and a small sculpture in relief from Samothrace, were all probably of the same period, to which might also be referred a bronze hare inscribed with a dedication to Apollo, and found at Samos; and a small bronze figure, found at Argos, dedicated, as the inscription on the base showed, by Polycrates. The characteristic of the sculptures of this period was a want of power to indicate organic life and capacity for movement. The seated figures from Branchidæ seemed welded to their chairs; the eyelids of such heads as were preserved to us seemed incapable of movement upwards or downwards, and the arms clung to the sides of the body. In a seated figure of Athene in the Acropolis at Athens, and in the reliefs of the Harpy tomb from Xanthus, in Lycia, we saw a decided advance in the style towards more varied and skilful composition of the drapery and better modelling of the nude. The progress in rendering anatomical truth might be traced by comparing the two statues of Apollo in the Archaic Room at the British Museum. The advance in sculpture might be further traced in the later metopes of temples at Selinus, and in the *στήλη* found in Attica, on which was represented a warrior in armour, with many details picked out in colour. The art of casting in bronze, which was greatly developed by Theodorus, of Samos, about B.C. 580, was applied to the making of colossal statues, such as the Apollo by Canachus, dedicated in the temple at Branchidæ, which was represented on coins of Miletus, and of which a small copy in bronze, made in Roman times, was in the British Museum. This art was further applied in the archaic period to the making of whole groups of men and horses, dedicated at Olympia early in the fifth century by the winners of the chariot-race and horse-race; and, as the sculptor learned to represent figures in violent action, his knowledge was applied in the composition of the marble pedimental sculptures and metopes of temples. We could thus trace the progress of the later archaic style up to the time, probably about 470 B.C., when the Æginetan sculptures, now at Munich, were executed. These ornamented the two pediments of the temple of Zeus Pan-Hellenios. Going back from the later archaic period to that previous age which the lecturer had called the Græco-Phœnician, and which, perhaps, included the age of Homer, we found very ancient works of art in metal, pottery, ivory, porcelain, and other materials, in all of which a foreign influence could be distinctly traced, sometimes reminding us of Egyptian, and oftener of Assyrian art. This foreign influence was explicable on the hypothesis that the Phœnicians, in the course of their traffic with the Greeks, between B.C. 900 and B.C. 700, introduced many articles of foreign art, some from Assyria or Egypt, and others fabricated by themselves in imitation of the art of those countries. That mixture of foreign and native art which was traceable in extant remains was exactly what the descriptions of works of art in Homer would lead us to expect. In the time of Homer there was probably little statuary in the round, except small idols in wood or stone, which, like the Trojan Palladium, could be easily carried off. These idols in the pre-Dædalian period would be of extreme rudeness, like the figures in terra-cotta found by Dr. Schliemann at Mycenæ. These antiquities, and certain very primitive gems found in Greece and the Archipelago, might be referred to a remote antiquity, perhaps to 1,100 or 1,200 B.C. The lions at the gateway at Mycenæ and the architectural ornaments of the entrance to the so-called Treasury of Atreus might be of even higher antiquity. They might have been the work of foreign artists, and came, perhaps, from Asia Minor, and, if we believed Greek legend, from Lycia. It was necessary to wait for the result of further discoveries before coming to a final conclusion as to the remains of this pre-Homeric age.

## THE CITY AUTHORITIES AND THE HOME SECRETARY AS TO THE WATER SUPPLY.

ON the 13th current a deputation from the City of London Commissioners of Sewers had an interview with the Home Secretary on the subject of the metropolitan water supply. The report furnished by the daily papers states that Mr. Roberts, the City Remembrancer, in introducing the deputation, said that they represented the City of London in reference to sanitary arrangement. But on the following day Mr. Roberts wrote to the journal in which this notice appeared to say that certain observations had been attributed to him which he did not make, and that it is not the Commissioners of Sewers, but the Corporation of London, who constitute the Metropolitan Authority for the purposes of the Metropolis Waterworks Act, 1871.

The object of the deputation was stated to be to ask what course the Government intended to pursue, especially with reference to any increase in the charge of rates under the new assessment. The Home Secretary, taking the deputation to represent the City of London with respect to the water question, said,—"Of course it became part of your duty to examine the proposals that were brought before the last Parliament. Did you examine the agreements which were entered into as the basis of the Bill?" To this simple question the chairman of the Commissioners of Sewers made the equally simple and conclusive answer, "We did not." The Home Secretary, not unnaturally, sought to obtain the opinion entertained by gentlemen who had come to him in a representative character as to the merits of the measure; and, returning more than once to the charge, was unable to elicit any reply as to whether the opinions entertained by his interviewers were favourable or adverse to the plan.

On this, the Home Secretary gave the very pertinent advice that the first thing requisite was the formation of opinion as to the nature of the terms proposed. Were they reasonable or otherwise? If it were held that the plan, or any modification of it, was desirable, the next point was the constitution of the Board. The constitution of the body that should administer the water supply was a very important question. Then might arise the question of arbitration. The Government wished to know the opinion of the City authorities on these subjects, as they were matters on which they could assist the Government more than the Government could assist them.

Again, the Home Secretary raised the very critical question of the power of the companies to increase their rates. As he understood the matter, Sir William Harcourt said, the companies had the legal right to charge upon the value of a house. Supposing a house at 100*l.* a-year was charged 2*l.* for water, if the rent was raised to 150*l.*, would the companies charge 3*l.*? On this point Sir William wanted to know what the actual practice was. Mr. Shaw, one of the deputation, said that such a rise was not usual. Another member of the deputation said that the charge on his house had been raised without re-assessment. Finally, Mr. Rudkin undertook that inquiry should be made on the points thus raised.

Since this report appeared, a ratepayer has written to the morning papers to complain of the raising of both his water-rate (by the New River Company) and taxes, from the scale of 63*l.* to that of 75*l.* per annum, on the raising of his assessment in the same proportion.

## CHELSEA SUSPENSION BRIDGE.

At the last meeting of the Metropolitan Board of Works, the Bridges Committee recommended that inasmuch as the engineer had reported that certain works are now required for the purpose of strengthening Chelsea Suspension Bridge, such works be forthwith carried out in accordance with a specification and drawings submitted with the report, and that tenders be invited for the execution of the works. Sir Joseph Bazalgette suggested that the following eight firms should be applied to for tenders, viz., Messrs. Andrew Handyside & Co., The Bridge and Roofing Company, Young & Co., Appleby, Morewood & Co., Rennie & Co., Cochrane & Co. (Dudley), and Brassey & Co. (Birkenhead). At the suggestion of Mr. John Jones, the firm of Crawshay, Head, & Co., of Gateshead, was included in the list, the engineer having no objection. On the recommendation of the committee being formally moved by Mr. Selway, Mr Edwards moved, and Mr. Turner seconded, that the work be thrown open to unlimited competition, and that advertisements be issued for tenders. Mr. Richardson, Mr. Lammin, and Mr. John Jones deprecated such a course, insisting that in a work of the kind under discussion, in which the safety of the public using the bridge was so largely involved, excellence of material and reliability of workmanship were far to be preferred to the chance of saving a few pounds by entrusting the work to firms possibly of less repute. The failure of the Tay Bridge was cited as a reason for extreme caution in dealing with such matters, and it was urged by Mr. Jones, in terms almost identical with the words used in our article ("The Theory and Practice of Inspection") last week, that there was a limit to the extent to which inspection could be carried, however vigilant Sir Joseph Bazalgette and his subordinates might and doubtless would be. Mr. Selway, in replying on the discussion, said that the Board would be taking upon itself a serious responsibility if, in a matter of such importance, it ran counter to the suggestions of the engineer. Every one of the firms named had achieved, and would desire to maintain, a character for excellence of workmanship and material in such structures, and most probably would not send in tenders if the competition were to be thrown open to smaller firms, and firms which had yet to make their reputation. The amendment was negatived by a large majority, and the recommendation of the committee was adopted.

## SOCIETY FOR PHOTOGRAPHING RELICS OF OLD LONDON.

This Society is doing good work, and has just now issued a fresh series. "There is an old hall, a beautiful specimen of the architecture of James's time; an old hall? many old halls; old staircases; old passages; old chambers decorated with old portraits, walking in the midst of which we walk, as it were, in the early seventeenth century." Thus wrote Thackeray of the Charterhouse, in one of the many passages in which he celebrates the "Grey Friars" or "Smiffle" of his early youth. Few public buildings in London are of equal interest with the Charterhouse, either on the grounds of historical association or of beauty; few are less known to the general public. For this reason it was determined, with the kind permission of the Rev. Dr. Currey, the present master, to make the old buildings of the Charterhouse the subject of the sixth year's issue of the Society. The subjects, twelve in number, are:—

Preachers' Court, so-called from the residence of the preacher, an officer of the Charterhouse.

Wash-house Court, one of the few relics of the old monasterial buildings. The domestic offices of the monastery, and afterwards of the Duke's Palace, were here.

The Cloisters. The walls are of the date of the old monastery; alterations by the Duke of Norfolk are marked by the date 1571 in the brickwork.

The Great Hall, which is the Pensioners' Dining-hall. This hall is mainly the work of the Duke of Norfolk, whose initials, with the date 1570, are found in the carved work. The chimney-piece is of Sutton's time, and the cannon and powder-barrels are in allusion to his office of Master of the Ordnance.

The Grand Staircase, the work of which is of the same date as that in the interior of the Great Hall.

The Governor's Room. Here in all probability Queen Elizabeth kept her court when she came to London from Hatfield on her accession; here, too, James on his accession held a court.

Entrance to the Chapel. On the wall to the left, not shown in the photograph, are tablets in memory of Leech and Thackeray. And

The Founder's Tomb.

The photographs, by Mr. Dixon, are printed in permanent autotype, from negatives taken by the newest photographic processes.

The subscription for the dozen is but a guinea.

## COMPETITIONS.

*Pendlebury Orphanage, Stockport.*—The legatees of the late Sir Ralph Pendlebury, knt., have just selected the designs of Mr. J. W. Beanmont, of Manchester, for a new orphanage,—part of the Pendlebury Charity Scheme,—the erection of which is to be proceeded with immediately on a plot of land at Heaton Norris, Stockport, at a cost of about 6,000*l*. Five architects were requested to submit plans. The building will comprise a hall to accommodate about 400 persons, day-rooms for the children, apartments for master and matrons, and the necessary offices. The style adopted is Tudor, and the building will be carried out in deep red stock bricks, with stone dressings. There will be a tower over the front entrance about 80 ft. high.

*Bapt'st Chapel, Hereford.* — No fewer than thirty-six architects have submitted designs for the Baptist Chapel about to be erected in Commercial-road, Hereford. The committee think that the design submitted by Mr. George Cowley Haddon, Hereford, and the one by Mr. John Johnson, of London, are most likely to meet their wishes, but on the merits of each there is an equal division, and consequently they have asked these gentlemen to unite and act together as joint architects, to which they assent.

*Tunstall Board Schools.*—At a recent meeting of the Wolstanton School Board the designs sent in in public competition for the school premises, with board-room and offices, which are to be erected in the centre of the town of Tunstall, were adjudicated upon, and the Board unanimously adopted those submitted by Mr. G. B. Ford, of Burslem. The Board have already erected five groups of schools in various parts of their extensive district. In each instance the designs were thrown open to public competition, and in each Mr. Ford was the successful competitor, and carried out his design.

*Stockton Board Schools.*—At a special meeting of the Stockton School Board on the 13th inst., an application from Messrs. Alexander & Henman, architects, asking to be allowed to send in competitive plans for the erection of a proposed school in Bowesfield-lane, was discussed. At a previous meeting of the Board it was agreed to ask Messrs. Weatherell & Moses, and Mr. Eugene E. Clephan to amend the plans which they had sent in, so as to make them accord with the requirements of the Board. The Board decided to inform Messrs. Alexander & Henman that as they were among the original competitors they might send in amended plans.

## THE DISPUTE AS TO A CHIMNEY AT THE "CRITERION."

At the last meeting of the Metropolitan Board of Works, the Building Act Committee presented the following report on this dispute:—

"In pursuance of the resolution of the Board of the 7th inst., your committee have had under consideration the matter of disagreement between Mr. Robert Kerr, District Surveyor for the district of St. James's, Westminster, and Mr. Thomas Verity, architect, with respect to the construction of a chimney-stack at the 'Criterion' Restaurant in Piccadilly. This matter was reported on by your committee on the 30th ult., and your Superintending Architect submitted to the Board on Friday last a report* setting forth the requirements of the District Surveyor with respect to the chimney in question. Your committee, having heard the parties concerned, and given their careful attention to the matter, are of opinion that the requirements of the District Surveyor are reasonable, and they therefore recommend that the Board do support Mr. Kerr, the District Surveyor, in his contention, and require an additional stay of H-iron, 9 in. deep, secured at the foot with a wrought-iron strap passing round the chimney, to be provided in the manner shown upon the ½-in. scale drawing supplied by Mr. Verity; and further require such work to be executed to the satisfaction of the District Surveyor."

* Published in last week's *Builder*.

## THE RECENT FIRE IN GRAY'S-INN-ROAD.

FIREPROOF DWELLINGS FOR WORKMEN.

The fire which occurred on the premises of Messrs. F. Sage & Co. on the 7th inst., and which was referred to in our last, calls to mind that in our volume for 1862, p. 890, a fire on the same or nearly the same site is recorded. On the west side of the area of the fire which took place in 1862 stood, and still stand, the "Thanksgiving"* Model Lodging Houses, erected, by the Society for Improving the Condition of the Labouring Classes, in Portpool-lane. These buildings, as we stated at the time, are fireproof. The rooms are arched with brickwork, the stairs and railings are of slate, stone, and iron, the window-frames, however, being of wood. These, on the occasion of the fire nearly eighteen years ago, were cut away by the firemen with their axes. The roof was partly burnt, and if the building had been constructed without any attempt to procure comparative immunity from fire, there is little doubt that it would have been entirely destroyed, for the flames from the neighbouring premises rushed in at the windows and swept along the ceilings of the rooms. The same block of buildings has again, by the recent fire at Messrs. Sage's, been exposed to a similar ordeal, with, we are glad to be able to record (on the authority of Mr. Henry M. Eyton, the architect to the Society), equally satisfactory results. On the occasion of the late fire, not one of the rooms was injured, with the exception of the window-sashes and some of the inmates' furniture, and none of the doors were injured, except by the firemen breaking them open. If the "Thanksgiving" Buildings had been built in the ordinary non-fireproof manner it is probable that not a vestige of them would have been left, as the heat was so intense that the mortar has perished in the joints of the brickwork. These buildings have now withstood the severe test of two large fires, so that they may fairly claim to be considered fireproof.

* Built in 1850, in commemoration of and thanksgiving for the removal of the cholera from the district.

## SEWAGE FARMS.

The report of the judges (Messrs. Baldwin Latham, Clare Sewell Read, and Thomas H. Thurnfield) appointed by the Royal Agricultural Society to adjudicate the prizes in the Sewage Farm Competition in 1879, has been published in the last number of the Society's *Journal* (vol. xvi. part i.). Two prizes, each of the value of 100*l*., were offered; one in Class I. for the best managed sewage farm utilising the sewage of not more than 20,000 people; and another, in Class II. for the best managed sewage farm utilising the sewage of more than 20,000 people.

In Class I. they submitted that the sewage farm of the Corporation of Belfast, managed by Mr. J. H. Collett, and that of Wrexham, farmed by Lieut.-Colonel Alfred S. Jones, V.C., were equal in merit, and, therefore, they adjudicated the prize to them jointly.

In Class II., for farms utilising the sewage of 20,000 people, they adjudicated the prize to the Earl of Warwick, for the Leamington Sewage Farm, managed under the direction of Captain Fosbery, the Earl of Warwick's agent, by Mr. Fough, the bailiff. They also strongly advised that a second prize should be given in this class to Mr. R. J. Brundell, in connexion with the sewage farm of Doncaster, which they considered "an admirable example of thrifty management, and as showing how sewage can be applied to general farming. They are of opinion that it would be an invidious position for the sewage farm at Doncaster to be placed in not to receive a prize, having regard to the fact that its merits considerably exceed those of the prize farms in Class I." In accordance with this recommendation, the Council of the Agricultural Society have given a special prize of 25*l*. to Mr. R. J. Brundell. The judges highly commend the sewage farm of the Birmingham Tame and Rea District Drainage Board, managed by Mr. James Anscombe.

In the conclusion of the report, the sanitary aspect of sewage farming is considered, and a table is given, showing the number of persons either living or working on the farms, the number of children residing on the farms, and the number of deaths which have occurred. The result of the sanitary inquiry shows that sewage farming is not detrimental to life or health.

## ALLEGED SEWAGE DEPOSITS IN THE THAMES.

IMPORTANT AWARD BY THE ARBITRATORS.

At the meeting of the Metropolitan Board of Works on the 14th inst., the Works and General Purposes Committee reported that they had learned from the Solicitor that the solicitors of the Thames Conservators were not prepared to pay the moiety of the arbitrators' and umpire's charges of the award in the arbitration case between the Board and the Conservators, and the committee, acting under the advice of the Solicitor, recommended the Board to pay the moiety in question, in order that the award might be taken up. They therefore recommended that a cheque for 1,732*l.* 10s. be drawn on the general account in favour of Messrs. Radcliff & Co.

Mr. Dresser-Rogers moved that a cheque be drawn as recommended by the committee.

Mr. Richardson remarked that the Board had already drawn a cheque for 1,700*l.* for one moiety of the costs of these proceedings. The Thames Conservators made a distinct charge against the Board, and it was only reasonable to suppose that the Conservators would have paid at least one moiety of the expenses of the inquiry they had brought about. But to their surprise the Board were now told that the Conservators would not pay their moiety of the costs, because they did not want to take up the award. In other words, the Conservators did not want to know what was the result of an investigation that they had themselves caused to be instituted.

The motion was agreed to, and at a later stage of the meeting the award was read by the Solicitor. It is in the following terms:—

"Having made this our report, we now determine:—

That the Barking and Halfway Reaches, where the three banks are situated, are now better for navigation than they were before the outfalls were opened; that is to say, vessels of greater tonnage and greater draught of water can now steam up or down, or can now be towed up or down the river, than the vessels which could pass in these manners before the dredging was executed; but at times, viz., near low-water, "sailing-vessels of a certain draught of water cannot make as long 'boards' when tacking to beat up or down the river as they could before the banks came into existence. In this limited sense only do we determine the banks to be obstructions to the navigation.

That each of the three banks has arisen from the dredging operations in Barking and Halfway Reaches, carried on by the Conservators of the Thames, or sanctioned by them, such dredging operations having removed material and having increased the sectional area of the river, and altered the direction of the flow of the currents and tide, so as to produce a diminished velocity in those parts of the reaches where the banks are situated, thereby causing a deposition of matter suspended in the river, and the formation of the three banks.

That the water in the tidal portion of the Thames contains a considerable amount of suspended matter, derived partly from the basins of the Thames and its tributaries, partly from the washing away of the foreshores of the tidal estuary where unprotected, partly from material brought up from the mouth of the river by the flood tide, partly from sand and mud stirred up in the course of dredging operations, partly from denudation of the river bed, partly from sewers in districts outside the metropolitan area, and partly from the sewers of the Metropolitan Board. The proportion contributed from this latter source is small as compared with the total amount of suspended matter in the whole volume of tidal water which flows past the outfalls on every tide.

That the three banks are composed of matter which had been held in suspension in the water, and had been derived from the several sources above mentioned. Whilst, therefore, the sewage from the metropolitan outfalls may have contributed to their contents, the three banks cannot be said, in the sense of the Act of 1870, to have arisen from the flow of sewage at the outfalls; and we are, therefore, of opinion that the Metropolitan Board of Works should not be called on to remove, or contribute any portion of the expense of removing, the three banks, or any of them.

That the said Conservators and the Metropolitan Board of Works do each bear their own costs of the reference, and pay one-half the costs of this report and determination, and that if either party shall in the first instance pay the whole or more than half of the costs of the report and determination, the other party shall repay so much of the amount as shall exceed the half of the said costs."

The above award is signed by both the arbitrators (Captain Douglas Galton and Mr. F. J. Bramwell), and a note is appended by Sir Charles Hartley, the umpire, stating that he fully concurs therein.

## PARLIAMENTARY JOTTINGS.

*The National Gallery.*—Mr. Coope has given notice that on an early day he will ask the First Commissioner of Works whether the Government will consent to the opening of the National Gallery to the public on those days on which students alone are admitted.

*Maintenance of Roads.*—Mr. R. H. Paget has given notice that on an early day, he will move,—"That, in the opinion of this House, it is not just that the expense of maintenance of main roads should be wholly and entirely borne by the local rate."

## ELECTION OF A DISTRICT SURVEYOR FOR BERMONDSEY.

At the meeting of the Metropolitan Board of Works on the 14th inst., applications were received from thirty-three candidates for the appointment of District Surveyor for the district of St. Mary Magdalen, Bermondsey and St. John, St. Olave, and St. Thomas, Southwark. The following is a list of the candidates, together with the number of votes recorded for each in the first vote,* viz.:—

Bridgman, H. H., 18; Brooks, C. W., 16; Buxton, W. J., 3; *Carritt, E.*, 24; Cender, A., 16; Dale, D. R., 18; Edmeston, J. S., 14; Elkington, G., jun., 13; Ferguson, J. M., 15; Grellier, W., 4; *Hammond, F.*, 30; Hesketh, R. L. (son of the late occupant of the office), 15; Hewitt, E. R., 6; Hunter, P., 17; James, J. W., 21; Karslake, L., 14; *Large, W. J.*, 23; Lees, W. H., 22; McDonell, G., 19; Mundy, T. E., 1; Nash, W. Hilton, 5; Notley, F. C., 12; Pownall, R. E., 11; Quilter, J. S., 19; *Smallpeice, W.*, 25; Stenning, A. R., 21; Stone, F., 9; Stone, T., 5; *Street, E.*, 24; Taylor, A. T., 6; Todd, F., 15; Waine, W., 2; *Williams, T.*, 31.

The six candidates who received the highest number of votes were therefore declared to be those whose names we have put in italics. The subsequent voting was as follows:—

| | Second Vote. | Third Vote. | Fourth Vote. | Fifth Vote. | Sixth Vote. |
|---|---|---|---|---|---|
| Carritt | 18 | 14 | 13 | — | — |
| Hammond | 27 | 24 | 23 | 25 | 30 |
| Large | 13 | 11 | — | — | — |
| Smallpeice | 11 | — | — | — | — |
| Street | 20 | 14 | 14 | 13 | — |
| Williams | 26 | 25 | 27 | 24 | 21 |

Mr. Williams was therefore declared to be the successful candidate, although Mr. Richardson, one of the members of the Board, raised the question whether forty-one members were present during the final voting. He believed there were not so many members present, and that being the case, some of them must, in the final voting, have voted for both Hammond and Williams, instead of for one only. This objection was ruled to be out of order, and Mr. Williams, having expressed his willingness to undertake the office subject to the conditions laid down by the Board, was unanimously appointed, and thanked the Board, expressing the hope that the manner in which he should perform the duties of the office would justify the Board in their choice.

*For reducing the names to six, in accordance with the usual practice of the Board.

## SURVEYORSHIP ITEMS.

*Newtown.*—At a meeting of the Newtown Local Board on the 7th inst., seventeen applicants applied for the post of surveyor. These were reduced to four, and afterwards to two. The competition lay between Mr. Parks, of Newtown, and Mr. G. C. Brown, Bryn-street. The latter gentleman was appointed by six votes to four.

*Ramsgate.*—On the 10th inst., several of the leading townsmen met at the Royal Albion Hotel, for the purpose of presenting an address on vellum, together with a purse of fifty guineas, to Mr. Conquest, who has for the past five years filled the office of town surveyor in Ramsgate, and who has recently been appointed to a similar position at Folkestone. The Vicar made the presentation.

## EXHIBITIONS OF PICTURES.

*Liverpool.*—Messrs. Thomas Agnew & Sons' annual exhibition of water-colour drawings is now open at the Exchange Art Galleries. In the present collection will be found examples of J. M. W. Turner, D. Cox, Gilbert, MacWhirter, S. Bough, F. Goodall, Fielding, Clarkson Stanfield, Cooper, Leighton, De Wint, B. Foster, and others, there being altogether over three hundred works hung.

*Hampstead.*—A loan exhibition of works of art, &c., was publicly inaugurated on Tuesday, at St. Saviour's Mission Room, Fleet-road, Haverstock-hill, in connexion with the South Hampstead Working Men's Club. The collection includes works by Lely, Ostade, Vernet, Greuze, Sir T. Lawrence, Prout, D. Cox, Turner, Linnell the elder, Birket Foster, Burne Jones, and Boughton.

*York.*—At a meeting of the Council of the Yorkshire Fine Art and Industrial Institution, held in the Exhibition Building, York, on the 13th inst., a sub-committee was appointed for the purpose of carrying out the first of the annual exhibitions of paintings by modern artists, which is to open on the 1st of July.

## INSUFFICIENT "QUANTITIES."

HUGHES *v.* CHAMBERLAIN.

At the Walsall County Court, on the 13th inst., before Mr. W. D. Griffiths and a jury, the case of Herbert Hughes, contractor, Lower Gornal, against Ralph Chamberlain, architect, Walsall and Aldridge, came on for hearing. Mr. Plamptre (instructed by Mr. Warmington, Dudley) appeared for the plaintiff, and Mr. C. A. Loxton appeared for the defence.

The claim was for 50*l.* for damages arising under circumstances explained by Mr. Plumptre in his opening address to the jury. He said that the defendant was an architect and quantity surveyor, and was in the habit of getting out quantities when tenders were advertised for, and sending these quantities in blank to different contractors. In 1878 a sewage scheme was begun for Walsall, and plans were prepared by the borough surveyor. For these the defendant got out the quantities and sent a copy of them to the plaintiff, who, after consulting with him, tendered for the work connected with the laying of the sewer. Plaintiff had known defendant for some years, and had tendered from his (defendant's) quantities on many occasions, and had found him skilful and trustworthy. Plaintiff, therefore, put every reliance on the defendant, and relying upon him, tendered for this sewer, basing his estimates on the defendant's quantities. The plaintiff paid defendant 30*l.* for the quantities, being at the rate of two per cent. on the amount of the contract. This was rather above the usual amount, which was generally one and a half per cent. Unfortunately the quantities were so inaccurate that the jury could not but find that defendant had been guilty of negligence. There was an excavation to be made according to the plan of the borough surveyor, and that had been estimated in the quantities as at an average depth of 13 ft., while the real depth was 15 ft. This had caused a loss of from 100*l.* to 150*l.* That, however, was not the chief blunder. The chief thing was that in the quantities it was stated that there would be 184 cubic yards of concrete, while, as a matter of fact, there were 570 yards. The plaintiff, therefore, might have claimed something like 400*l.*, but, as the parties had known each other for some time, the plaintiff really would be satisfied with the sum of 50*l.* if the defendant liked to pay that sum and settle the matter.

Plaintiff was then called and examined by Mr. Plumptre, and stated that the extra depth of the excavation made a difference to him of about 300*l.*, and that the extra cost of the concrete was 241*l.* 5s.

Mr. Boys (borough surveyor of Walsall) and Mr. Marsh (of Dudley) were also called for the plaintiff.

The jury returned a verdict for the plaintiff for 50*l.*, the full amount claimed.

## COMPENSATION CASES.

*Blackman v. The London School Board.*—This case was heard before Mr. Under-Sheriff Abbott and a special jury at the Surrey Sheriffs' Court. It was a claim for compensation for some freehold property in the Battersea Park-road, the site being required for school purposes. The claim was about 11,000*l.* A verdict by consent was taken for a sum of 7,000*l.*

*Mickleover School Board v. Bailey.*—At the Derby County Police Court on the 7th inst., William Bailey was summoned, under the provisions of the Lands Clauses Consolidation Act, for failing to state the particulars of his claim for compensation in respect of a piece of land, two roods in extent, which he occupies at Mickleover, and which is required by the School Board of that place for the erection of new schools. In this case the magistrates, practically, were called upon to act as arbitrators. It appeared that the Board had given proper notice to the defendant to quit the land, but he objected to leave, and had failed to send in the particulars of his claim for compensation. The Board required the land immediately. Defendant had stated verbally that he wanted 15*l.*, and the Board had offered him 2*l.* 10s. Having heard evidence as to value, the Bench made an order for the payment of 2*l.* 10s. to the defendant.

*Grennan v. The Corporation of Dublin.*—In this case, heard in the Queen's Bench Division, Dublin, before Mr. Justice Barry and a common jury, the plaintiff traversed an award made by Mr. George Pomett in respect of premises taken by the defendants under the provisions of the Artisans' Dwellings Act. The traverser held a yard and cowshed in Elbow-lane, under Lord Meath, as tenant from year to year, at 10*l.* per annum. The arbitrator had awarded him 10*l.*, and he claimed 250*l.* The jury found for the traverser for 30*l.*

*Reynolds v. The Corporation of Dublin.*—The plaintiff in this case (heard before the same tribunal) traversed an award by the arbitrator, giving him 2*l.* in respect of premises taken by the Corporation for the Artisans' Dwellings, Coombe Area. The traverser held, under Lord Meath, three cottages and a stable in Elbow-lane, at 2*l.* a year, and his wife deposed that they were worth to her, by sub-letting, &c., 8s. 4*d.* per week. Mr. Justice Barry said it was a monstrous thing that the Corporation should seek to disturb this interest for 2*l.* Mr. Bewley said that the plaintiff had claimed 200*l.*,

and the arbitrator, proceeding on the principle of only giving one year's rent in the case of the disturbance of tenants holding from year to year, awarded 2*l*. Of course that should be increased somewhat, but until they had authority from the court to do so the Corporation were powerless. The jury awarded the plaintiff 40*l*.

## NEW FISH MARKET, NEWCASTLE-UPON-TYNE.

AT a small cost the Corporation of Newcastle-upon-Tyne have provided their town with a wholesale Fishmarket on the Quay, between the Swing and High Level Bridges. The dimensions of the building are 140 ft. by 40 ft. The height of the walls is 24 ft., with a centre pediment 6 ft. higher. The river front is of red-pressed brick, relieved by bases, columns, pilasters, cornices, and pediment of Gunnerton freestone. Internally the walls are lined to a height of 6 ft. with white glazed tiles. The roof is of iron, pierced with skylights and ventilators. Surmounting the central pediment is a group of statuary by Mr. George Burn, a local sculptor, which adds greatly to the effect of the front elevation of the river. The central figure, Father Tyne, which is 9 ft. in height, is supported on either side by a seated fishwife with a basket of fish. A spacious wooden quay gives ample space for the landing and sale of fish by auction, and the street frontage will have built to it a number of handsome retail shops. Mr. Fowler, the borough engineer, prepared the plans.

## MASTERS AND MEN.

*Warrington.*—A strike of bricklayers and joiners commenced at Warrington on the 12th inst. It seems that in November of last year the masters issued a notice for a reduction in the wages of joiners and bricklayers of 1d. per hour, and they received counter notices from the workmen for an advance of ½d. per hour for joiners, and an advance of ½d. per hour for bricklayers. At an interview of masters and men on the 7th inst., the joiners asked for the withdrawal of the masters' notice, and that work should proceed on the current wages. To this the masters objected, but did not press for a greater reduction than ½d. per hour, and ultimately, with the desire to avert a strike, offered to proceed at a reduction of ½d. per hour. The men rejected the offer, and came out on strike.——The representatives of the operative house-painters and employers of Warrington have met to discuss the points at issue and contained in the notice of reduction of ½d. per hour, received in December last, which reduction was intended to come in force on May 12th. The operatives pressed the employers to withdraw the notice, and protested that such a reduction would bring their wages down to the rates of pay received fourteen years ago. After a prolonged interview, the employers withdrew the notice, and decided that the wages remain unaltered.

*Greenock.*—The strike of the Greenock painters has terminated, the masters having agreed to give the men an advance of ½d. per hour, and a guarantee that the wages will be 7d. per hour up to the end of the present year.

*Birmingham.*—Messrs. Chance, Bros., Spon-lane Glassworks, have advanced the wages of their operatives ten per cent.

*The Great Cotton Strike.*—About 25,000 weavers are now out on strike in Blackburn and neighbourhood, and upwards of 40,000 looms have stopped working. The strike is for an advance of wages.

**The City Church and Churchyard Protection Society.**—A deputation recently waited upon the Lord Mayor, introduced by Mr. Henry Wright, hon. sec., consisting of the Chairman of Council, Mr. H. Chas. Richards, of Gray's-inn, and the Rev. Minor Canon Shuttleworth, to ask his lordship to grant the use of the Mansion House for the first public meeting of the Society. The Lord Mayor at once granted the request. The meeting will be held on the 23rd of June at half-past four, when a paper on City Churches will be read by Mr. Scott, written by his late father, Sir Gilbert Scott. Tickets of admission will be necessary, to be had by writing to the hon. secretary, 22, Charterhouse-square. Several well-known speakers are expected to address the meeting.

## A WARNING TO WILLESDEN.

SIR,—I must ask you to be good enough to correct a slip in regard to the paragraph in last week's *Builder*, headed "A Warning to Tottenham." The letter which I addressed to the *Willesden Chronicle*, and of which you quoted a part only, related to the present condition not of Tottenham, but of *Willesden*, and I was desirous of urging the people of Willesden, who evidently have a great deal yet to learn in sanitary matters, to take advantage of the past experience of Tottenham, and prevent undue sickness and mortality in the future by a wise administration in the present.

I enclose a cutting from this week's *Willesden Chronicle* showing how local matters are dealt with, and how numerous are new buildings in the locality. This latter point, however, is already known to you, for at p. 295 of this year's volume, you report the statement of an auctioneer that in one part of Willesden alone something like 2,000 houses are to be erected in the present year.

I venture to hope that when you have time you will be able to visit this part of "Suburban London" and see how it is changing.

P. GORDON SMITH.

*** We have received a letter on the same subject from Mr. Edward Crowne, clerk to the Tottenham Board, and Mr. de Pape, engineer and surveyor. We regret the misunderstanding which led to the erroneous heading of the paragraph.

## VIBRATION AS A MODE OF MOTION.

SIR,—The expression "light as a mode of motion," though it may be sufficient for the initiated, is apt to mislead the student; for "light," being the effect of vibrations on the sensorium, is a sensation. The expression "light as a mode of motion," therefore, if literally accepted, would make sensation a mode of motion. I would on this account very much prefer to see the following nomenclature accepted:—

Vibration as a means of motion:—1. Heat. 2. Sound. 3. Light.

If such were the form used, the "mystery of colour" would, in its rigorously scientific aspect, if not in its sensational, be soon cleared up. The following appear to me to be the positions which have to be mastered:—

1. The external correlates of visual impressions are simply vibrations. All the various sensations of light are the effects of the differentiation of the optic nerves by vibratory action.

2. The prism, therefore, refracts vibrations and not colours. And the question would appear to me to be pertinent, which asks, why the angle of reflection should be constant, whilst the angle of refraction varies? When colours were supposed to be inherent in some external occult properties of the rays of force, the explanation of prismatic refraction seemed to be sufficient. Now, the famous experiment requires more complete explanation.

3. The decomposition of "white light," as it is erroneously termed, was effected some of time before Newton's experiment with the prism, and without refraction, by every one whose eyes were dazed by the sun, or who had experienced any vivid sensation of colour. The ocular spectra are produced without the *selective* intervention of the prism.

4. Brewster demonstrated by experiments that none of the rays refracted by the prism are decomposable. Every ray would, therefore, appear to have an equal right to be considered as a primary. If any two be combined, they may be resolved again by the prism.

5. As it is scarcely consistent with the mechanical theory to speak of one kind of vibration being absorbed by, and another reflected from, a body, would not the *undulatory* theory as applied to sensations of light be more completely parallel with the same theory as applied to sensations of sound, to assume that substances only reflect those vibrations with which they are *en rapport*, just as musical strings do those to which they are attuned? To my mind, the hypothesis of absorption has an absolute and unscientific aspect. To take great pains to prove the correspondence of the undulatory theory of light with that of sound in some important particulars, and to leave it at variance in others equally important, is not a position of strength.

6. There need be no discussion about the complementary of any colour, as I have fully shown in my "Revised Theory of Light," for the eye has an unfailing mode of finding the harmonic of any sensation of colour by observing the ocular spectrum of that sensation. Every one who is aware of this, and that the true science of the harmony of colour is founded upon the laws of his sensuous nature, has always the means, with a few external aids at hand, of determining the true harmonic of any sensation of colour for himself. It is curious that this simple means of discovering the science of colour which nature has written in man's nature should not have been made known to the student long since.

7. Sensation itself is beyond the reach of analysis. We may speculate about it, but we cannot fathom it. In sensation will always remain the Mystery of Colour.

W. CAVE THOMAS.

## THE METROPOLITAN BUILDING ACTS.

### OPENINGS IN PARTY-WALLS.—FIREPROOF DIVISIONS.

MESSRS. Frank Kirk & Joseph Randall were summoned before Mr. Newton, at the Marlborough-street Police-court, by Mr. Robert Walker, District Surveyor of St. Martin's-in-the-Fields, for that they, being engaged in doing certain work to and upon the premises Nos. 27 and 28, Haymarket, did make an opening in the party-wall thereof, contrary to sec. 28 of the Metropolitan Building Act, 1855; and further, that they did omit to separate by fireproof construction the various portions of No. 27, Haymarket, which are in different occupations.

Mr. Besley appeared for the defendants.

The District Surveyor explained to the magistrate that the object of this summons was to compel the defendants to put fire-proof separations between the portions of No. 27 in the occupation of the Civil Service Stores, and the ground-floor of the same premises in the occupation of Mr. Hudson, a chemist.

Mr. Besley objected that two offences had been included in the one summons, and urged that that fact rendered the summons bad on the face of it, but Mr. Newton over-ruled the objection. Mr. Besley then, in regard to one of the points embodied in the summons,—that, namely, which called on the defendants to make fire-proof separations between the premises in different occupation,—said it was premature to take these proceedings, because the plan of reconstruction provided fully for obeying the statute in that respect. It would be seen by the agreement which he produced,—(the agreement by which Mr. Hudson leased to the Civil Service Stores the whole of No. 27 except the ground-floor),—that four of the openings which had existed in the old party-wall were to be stopped up entirely in the new party-wall; and that in regard to the two remaining openings, viz., one on the ground-floor, which had been enlarged, and one on the basement, provision was made for the erection of fire-proof doors. This would not only be done in accordance with their agreement with Mr. Hudson, but also in compliance with the conditions of the Insurance Company. The fire-proof doors were already on the premises, and when the building was sufficiently advanced they would be fixed in.

Mr. Walker pointed out that the buildings being in two occupations, the defendants had no right to unite them. The Act said that no buildings should be united unless they were in the same occupation.

Mr. Besley, on the contrary, pointed out that by sec. 28, rule 3, openings in party-walls were permitted on condition that "such opening shall have the floor, jambs, and head formed of brick, stone, or iron, and be closed by two wrought-iron doors, each ¼ in. thick in the panel, &c.," and that condition the plans of the building in question made provision for complying with.

Mr. Walker still contended that by rule 1 of sec. 28 no buildings could be united at all unless they were wholly in the same occupation.

A long discussion then ensued, in the course of which Mr. Besley showed a singular amount of temper, for which he afterwards apologised.

Mr. Walker said there was great difficulty in getting over these joint occupations. He would be satisfied if the defendants would place joists with a layer of concrete over the floors sufficient, in case of fire, to prevent the flames spreading during the half-hour or so that might elapse before the arrival of the fire-engines. He wanted that concrete over and under the ground-floor occupied by Mr. Hudson.

Mr. Newton.—Why will not iron doors do?

Mr. Walker.—Because iron doors are to unite the buildings, and the law is, that if they are not in the same occupation they are not to be united.

Mr. Verity (architect to the Civil Service Stores) contended that the Act allowed them to unite under conditions, which conditions were being observed in this building.

Mr. Walker, after further discussion, said his reason for prosecuting in this case was that, after the three great fires which had recently occurred in connexion with chemical establishments, he could not take the responsibility of leaving unnoticed any neglect of the requirements of the law.

Mr. Newton.—Yes; I see your point. What do you say should be done?

Mr. Walker.—I would put a layer of concrete or fire-proof material on the top of the ground-floor and on the staircase.

Mr. Verity said this was not practicable, and Mr. Besley pointed out that it would be calling on the builders to rebuild Mr. Hudson's flooring whether Mr. Hudson liked it or not.

Another long argument ensued, and Mr. Newton said he had no alternative but to make the order asked for by Mr. Walker, unless the parties liked to come to an arrangement.

Mr. Besley declined to advise his clients to give way to Mr. Walker in this matter. He called

Mr. Thomas Verity, the architect, who proved that Mr. Hudson had an entirely separate occupation of the ground floor of No. 27, and that in the old party-wall before it was condemned there were four openings, of which, in the newly-constructed party-wall, two were closed by licence (produced) from Mr. Hudson, the lessor, the other two,—one on the ground floor and one on the basement,—remaining in their old positions, and these two were to be closed in by fireproof doors. The whole of the premises, 27 and 28, were in the undivided occupation of the stores, with the exception of the shop at No. 27.

Mr. Newton then made the order asked for by Mr. Walker, and Mr. Besley gave notice of appeal.

---

With reference to the report in our issue last week of the proceedings at the Marlborough-street Police-court, against the builders who are erecting the Stores in the Haymarket, Mr. R. Walker, district surveyor, writes:—

Mr. Newton, the magistrate, intimated that he should dismiss the summons against the builders "for not producing the drawings at my office," in accordance with the regulations prepared by the Board of Works, but upon my proving the facts, and asking for a case in a Superior Court, he then strongly advised the defendants to *submit the plans to me at my office according to the Board's form*, suggesting that I should withdraw the summons. This I consented to do, and Mr. Poland, who appeared for the builders, *pledged himself that the plans should be produced at my office*; but I regret to say that Messrs. Kirk & Randall have not yet complied with the pledge given by their counsel, and I have not yet seen the plans,—why, I cannot imagine,—and, like the magistrate, I am rather surprised that there should be "such a mystery" about producing plans of a building for the district surveyor's inspection.

I may state that the reason why I insisted on the plans being submitted in the present case was that when I inspected some few which I saw in the foreman's office, I was told they were not the correct plans, and the only way in which I saw a chance of getting the proper working plans produced was by insisting that the builders should formally submit them to me.

The law is perfectly clear in throwing the responsibility of producing the plans on the builder, and common sense, convenience, and all other proceedings under the Act, as well as the forms of the Board, which were prepared by counsel, prove that such production should be at the district surveyor's official place of business.

The plea urged by counsel that, because there are no regulations specifying the thickness of iron in the Act, therefore the district surveyor has no right whatever to see or examine the drawings of the intended iron construction, is an illustration of the way in which these matters are discussed before police magistrates, and a proof that the new bye-law as regards the production of plans is practically of no use whatever for the protection of the public.

---

## DIGGING AND CARTING AWAY SAND.

### DAVIES *v.* SHELDON.

In this case, brought before Mr. Serjeant Wheeler, at the Brompton County Court on the 14th inst., it appeared in evidence that the defendant, a builder, who formerly lived in the Brompton-road, contracted to do some alterations at Mr. Davies's house in Brompton-square, in the summer of 1878, and while these works were in progress the defendant dug two pits in the garden attached to the premises, and removed thirty loads of sand or gravel therefrom, and had it carted to Britten-street, the same being the property of the plaintiff, and valued at 10*l*.

The plaintiff now claimed the value of the sand, and 30*l* damages to the ground, as the holes had been filled up with impure rubbish, which was very detrimental to the health of the inhabitants.

James Davies, the plaintiff, proved that he did not consent to the removal of the sand, and it coming to his knowledge, he at once took proceedings against the defendant. Edward Godfrey proved digging the sand up, and filling up the holes with rubbish. [Mrs. Davies, wife of plaintiff, said she frequently visited the premises while the work was being done, but never saw these pits, and did not know the sand had been taken away.—John Ashby, garden contractor, proved that considerable damage had been done to the garden by the removal of sand and the substitution of impure rubbish.

Mr. Poulter made an address for the defence, in the course of which he said that the defendant claimed the right to the sand as his own; and not only did the plaintiff consent to the removal, but was prepared to pay defendant to remove the same.

The Judge, without hearing the defence, gave a verdict for the plaintiff for the value of the sand, and remarked it was a most unreasonable thing to believe that the plaintiff would consent, and be prepared to pay to have his garden damaged in the way it had been. This verdict established an important point of law, as it is a too common practice for builders to dig for sand to make mortar, wherever they have works in progress.

---

**Aberdeen Public Buildings.**—It being proposed by the Municipal Council to put a fine peal of bells, with chimes, in the tower of their municipal buildings, not long since erected from the design of Messrs. Kinnear & Peddie, of Edinburgh, the Council requested Mr. Charles Barry to examine the structure, and report as to its solidity and suitability for a peal of bells of a certain weight,—part to be swung and part to be fixed. Mr. Barry has proceeded to Aberdeen for this purpose.

## THEATRES.

*Torquay.*—Extensive alterations have lately been made in the Lyceum Theatre, Torquay, under the direction of, and from plans prepared by, Mr. C. J. Phipps, F.S.A. Improved means of entrance and exit have been provided, and the house has been considerably enlarged. The interior has been decorated by Mr. Bell, of London, and the gasfittings have been supplied by Messrs. Strode, of London, and Messrs. Watson, of Torquay. Mr. F. Stripling acted as clerk of the works.

*London.*—At the meeting of the Metropolitan Board of Works on the 14th inst., the Works and General Purposes Committee reported that the Superintending Architect had laid before them an elevation and plans for the erection by Mr. Sefton Parry of a theatre on two plots in Northumberland Avenue. As it appeared that Mr. Parry had not at present executed the agreement for taking these plots from the Board, the committee had thought it desirable to defer the consideration of the plans until that had been done. They recommended, however, that upon Mr. Parry signing the agreement, the plans should be referred to the Building Act Committee for consideration and report to the Board.

---

## CATHEDRAL RESTORATION.

*St. Alban's.*—It is stated that the opponents have abandoned the appeal against the Diocesan Chancellor's judgment in favour of Sir Edmund Beckett being granted a faculty for continuing the restoration of the cathedral at the west front, and that the most urgent repairs have been begun already.

*Carlisle.*—The works now in progress are part of the general plan of restoration of the Fratry and Cathedral, under the direction of Mr. Street. With the exception of the Bishop's throne the alterations are being made entirely in the choir. The old throne has been removed, and a new one, designed by Mr. Street, erected in its stead. The new throne has been designed as a continuation and culmination of the tabernacle work over the stalls. It has been placed close up to the stalls, and exactly in front of the doorway which gave admission to the choir from the south aisle, that door having been done away with. The throne is not in the centre of the arch and the spire of the structure ascends at least 2 ft. above the arch. If it had been placed in the middle the spire would have reached just a very few inches above the apex of the arch, and would certainly (says the *Carlisle Journal*) have looked more symmetrical and more like being permanently placed than it appears at present, as its position now conveys the impression that it has been merely temporarily erected. All the carved wood and stone work is being done, from designs supplied by Mr. Street, by Messrs. Rattee & Kett, of Cambridge, Mr. Creed being the clerk of the works. The style of the throne is Late Decorated. The base is a plinth of fine white Portland stone, carved in exact imitation of the plinth that supports the stalls. The material used for the throne is oak, all the fine carved work being in English oak, and the panels in foreign oak. The lower part is comparatively plain, though the exterior of all the four sides is carved in panels bearing tracery work in the upper portions. Inside, immediately above the seat, are linen panels. The height from the floor to the topmost pinnacle will be 29 ft.

*Bangor.*—On the 11th inst. Bangor Cathedral was re-opened in its entirety on the completion of works which have extended over a year. The restoration just completed is a continuation of that which was completed in 1873, and embraces the renovation of the nave and transepts, the erection of a chapter and muniment-room, together with the external improvement of the building and its approaches. The old roof of the aisles and nave has been cased with panelled oak; the concrete floor has been laid with encaustic tiles, and the windows, which hitherto presented a great variety of architectural styles, have been made uniform, those at the west end being filled with a representation of the Evangelists, placed as a memorial to the late Dean Cotton. The baptistry has been slightly raised and tiled; oaken seats or benches have been substituted for the chairs in the transepts and nave; and additional accommodation has been provided for the choristers. The chancel stalls, including those of the dean and sub-dean, have been canopied; an organ-screen has been placed in the north transept; and the Freemasons of North Wales and Shropshire Province have subscribed the funds necessary for a throne for the bishop. Although within the last ten years the restoration of the cathedral, which dates as a foundation from the sixth century, has absorbed about 35,000*l*., the work is far from complete, and funds are needed for a reredos and the erection of a spire. The present works have been carried out by Messrs. Thompson, of Peterborough, under the direction of Mr. John Oldrid Scott, from the designs of the late Sir Gilbert Scott.

---

## CHURCH-BUILDING NEWS.

*Hornsey.*—Mr. O. E. Coope, M.P., has laid the dedication-stone of a new church now in course of erection at Crouch-hill, Hornsey. The new building, to be known as Holy Trinity Church, will, when completed, seat 1,000 persons. The total cost of the building is estimated at 6,200*l*., towards which upwards of 4,000*l*. have already been raised.

*Plymouth.*—The foundation-stone of St. Peter's Church, Plymouth, has been laid by the Earl of Devon. Two silver trowels were used, one being presented to Lord Devon, and the other to Miss M. O. Middleton, the founder of the rebuilding fund. The new church will stand on the same site as the present unsightly building. The whole of the old building, with the exception of the sanctuary and vestries, will be demolished. It has been a matter of no small difficulty in design to make these old portions harmonise and group well with the new building. The sanctuary was built from designs of Mr. Street, R.A., some thirty years ago. The designs for the new building have been prepared by, and are now being carried out under the supervision of, Mr. Geo. K. Fellowes Prynne, architect; the builder is Mr. Alfred Guy.

*Silverton, Devon.*—St. Mary's, Silverton, was restored in 1863, from the designs of Mr. Edward Ashworth, of Exeter, and has now received further additions at the hands of the same architect. The works being complete, the re-opening took place on the 1st inst. There is a new vestry opening into the north side of the chancel. It has a flat roof and embattled parapets, and has dressings of Bath stone. Within, the roof is panelled, and its intersections stopped by bosses. A western screen of oak has been erected, into which is incorporated an old parclose screen existing in the church. This screen bears an inscription,—"In memory of Jane, Countess of Egremont, who died on the 18th of December, 1876." There is a new organ, by Messrs. Walker & Sons, of London. A new east window has been inserted, painted by Messrs. Ward & Hughes, of London. It represents, in the upper part of its three lights the Annunciation, Crucifixion, and the Women at the Sepulchre, and, below, the Last Supper. The contractors were Messrs. Dennis & Short, Mr. Dennis not surviving the completion of the work. Mr. R. Mitchell did the masonry, and Mr. Harry Hems the stone carving. The total cost of what has been just done is about 800*l*.

*Shobrooke.*—The parish church of Shobrooke, near Crediton, Devon, was reopened on the 5th, after considerable works of alteration and repair. The alterations include the erection of a new aisle, 53 ft. by 12 ft., part of it forming an organ-chamber and vestries, removing the west gallery, and newly roofing the whole church with cradle roofs of red deal. The north arcade has had new piers inserted to the old arches (Perpendicular). The pier capitals, corbels, &c., have been carved by Mr. Trevenen, of Plymouth. The new ceiling is of pitch pine, having traceried fronts and ends. The chancel seats are of wainscot; the pulpit is of English oak. There is an elaborate iron screen between the nave and chancel, with gates, the work of Messrs. Rowe, of Exeter. The reredos is of Corsham stone, the work of Mr. H. Hems. The emblems in the panels and altar-rail standards are by Messrs. Brawn & Co., Birmingham, from the architect's designs. The east window of the chancel, subject, "The Last Supper," is by Messrs. Clayton & Bell; and two stained-glass windows in the south aisle are by Messrs. Dixon & Vesey, of London. The ancient south Norman doorway has been re-erected in the new aisle. The carving of the capitals, corbels, &c., is by Mr. Trevenen, of Plymouth. The work has been carried out by Mr. W. B. Berry, of Crediton, Mr. Ashworth, of Exeter, being the architect. The illumination of the screen is by Messrs.

Beer & Driffield, Exeter. The outlay is nearly 2,500*l.*

*West Tilbury.*—The parish church of West Tilbury has been re-opened, after being closed for restoration during the past twelve months. The work has been done by Mr. Middleton, of Milton-next-Gravesend, from plans prepared by Mr. W. Benton, architect, London. Sittings are now provided for 200 persons. The pulpit, of oak panelling, was executed, as were the other fittings of the interior of the chapel, by Mr. C. Howard, of Orsett. The restoration comprises new windows, roof, floor, and benches (replacing high pews), and extensive repairs to the walls. The tower, which was found to be in the last stage of decay, being composed entirely of wood, and having been built in 1712, was taken down, and it is intended at some future time to build one of brick and stone. The total cost of the works now carried out has been upwards of 1,200*l.* The church has some historical associations. Laud held the living in 1609, and the building is stated to have suffered some spoliation in the time of the Commonwealth.

*Cambridge.*—St. Barnabas Church, Mill-road, Cambridge, was consecrated on the 4th inst. The building has been erected by Messrs. Thoday & Sons, builders and contractors, from the designs of Mr. Smith, architect, London. It consists of a nave, chancel, and two aisles, and the material used is white brick, with stone dressings. It is proposed, at some future time, to add a vestry, organ-chamber, and tower. The cost already incurred has been about 4,500*l.*

*Sutton Coldfield.*—The ancient parish church (dedicated to the Holy Trinity) has been re-opened, after undergoing considerable alterations and additions. A new north aisle has been erected, the west gallery removed, and the western (or tower) entrance (after being for a long time closed and used for a vestry), has been re-opened, and restored to its original use. The stonework has been executed with local stone, the roofing timbers are varnished pine, and the seating is of oak. The work has been executed by Messrs. Chas. Lloyd & Sons, contractors, of Sutton Coldfield, from designs furnished by Mr. Yeoville Thomason, architect, Birmingham, at a cost of between 4,000*l.* and 5,000*l.*, the whole of which has been defrayed by the rector, the Rev. W. R. R. Bedford.

## Books.

*Spon's Engineers' and Contractors' Illustrated Book of Prices of Machines, Tools, Ironwork, &c., and Engineers' Directory for* 1880-81. THIS is is a large, well-bound book, the object of which is self-evident. It not merely gives the prices of tools or machines that may be desired, but will serve to show to many where machines and tools that would be useful to them, and of which they know nothing, may be had. The lists given of the members of recognised professional institutes established in London and the provinces will be found valuable by merchants and patentees.

### VARIORUM.

A SECOND edition has been published of the "Handbook of House Property," by E. L. Tarbuck (Lockwood & Co.). It is a very useful little volume, and includes,—1st, matters relating to the Law affecting Land and Houses; 2nd, to the Practice in Valuations; and 3rd, to Procedure in Building Houses.——"Remnants of Old Wolverhampton and its Environs" will form an interesting record of an interesting part of the country. It consists of a series of etchings on copper, by John Fullwood, with short descriptions, and is being published in parts by Fullwood & Hellier, of Woverhampton.——"The Churches of Yorkshire, Illustrated," by W. H. Hatton and W. E. Fox (24, Chapel-lane, Bradford), is intended to give the history and full description of the buildings. It is published in monthly parts, at a very low price. The illustrations however, are unsatisfactory.——"Friction and Lubrication," by Robert H. Thurston, A.M.C.E. (Trübner & Co.), gives demonstrations of the laws and co-efficients of friction by new methods and new apparatus. The book has grown out of certain lectures on the subject, delivered by the author in New York. The importance of a due understanding of the subject is seen when it is said that in an ordinary establishment where 100-horse power is used a change of lubricant would often effect a saving of 100*l.* a year.——"The Gas and Water Companies Directory, 1880," and "Gas Works Statistics, 1880," are both edited by Charles W. Hastings (22, Buckingham-street, Adelphi), and afford data of value. The second named gives the tons of coal carbonised in each town, the make of gas; the price per 1,000 cubic feet, price paid for public lamps, and amount of dividend.——The *Lancet* says:—"In our last issue, we called attention to the important concession made by admitting the President of the Local Government Board to a seat in the innermost council of state, the Cabinet; and showed how this arrangement must practically make the care of local interests an integral part of public policy, and substantially create a Ministry of Health. The health of a nation must be the first condition of its real prosperity; and it was simply monstrous to leave the Minister responsible for the preservation of public health out of the Cabinet. While this member of the Government was excluded from the inner council, the health interests of the people were necessarily subordinated to other considerations, and could not, under the best of circumstances, obtain more than a second-hand representation. How disastrous such an arrangement may prove, and how the occasional authority of the Privy Council in matters whereof it has no official cognisance, and in which, therefore, it is incompetent to meddle, is likely to operate mischievously, was made abundantly evident during the recent alarm of plague. The President of the Local Government Board is the responsible Minister charged with the duty of making the ordinary conditions of life throughout the country so healthful, and providing every district with the means of isolating cases and stamping out epidemic disease in such efficiency, that even the plague shall have been deprived of its terrors. By concentrating the whole sanitary authority in his own hands, as the position the President now holds will enable him to do, many difficulties will be removed and much embarrassment avoided."——*Fossick's Iron Trade Chart* will interest the iron trade generally, as it shows for the past fifty years the fluctuations in prices of rails, Welsh bars, Staffordshire bars, and Scotch pig-iron; also the almost continuous increase in the yearly production and export of iron and steel from the United Kingdon, with the stocks of Scotch pig-iron held at the end of each year. From the data given it appears that the production of iron in the United Kingdom increased from 678,417 tons in 1830, to 6,200,000 tons in 1879, the largest production being reached in 1872, when it amounted to 6,741,929 tons. The stocks of Scotch pig-iron, which in 1844 amounted to 200,000 tons, reached 250,000 tons in 1845, but fell to 125,000 tons in 1847, when they again commenced to increase, and in 1852 reached 500,000 tons. The lowest point appears to have been touched in 1856, on the termination of the Crimean war, when the total quantity in stock was 100,000 tons, from which point it increased yearly until the end of 1864, when it reached 750,000 tons; by the end of 1867 it had fallen to below 500,000 tons, and then again commenced to show an annual increase until 1870, when it reached 700,000 tons, from which by degrees it diminished, till in 1874 it was down to 100,000 tons. It has since continued to increase yearly, and at the end of last year amounted to a little over 750,000 tons. The exports of iron and steel in 1830 amounted to 117,135 tons, and increased each year almost without break, excepting during the Crimean war in 1854-6, and the American Civil war in 1861-5, until 1872, when they reached their maximum, viz., 3,382,762 tons; from this they decreased until they reached 2,224,470 tons in 1876, at about which level they continued until last year, when they reached 2,879,834 tons. The price of steel rails, which in 1864 was 17*l.* 10*s.* per ton, fell gradually, until in 1870 it averaged for the first half-year 10*l.* per ton; in 1872, and again in 1873, the price once more reached 17*l.* 10*s.* per ton, and by the autumn of last year it had fallen to 4*l.* 13*s.* per ton (about the same price as iron rails), but by the end of the year had risen to 8*l.* The *Chart* is published by Messrs. E. & F. N. Spon.

**The Port of London.**—At the meeting of the Court of Common Council on the 13th inst., Dr. Collingridge was elected Medical Officer of Health for the Port of London, in the room of the late Dr. Harry Leach. Dr. Collingridge polled 103 votes as against 61 recorded for Dr. Turner, of Portsmouth.

## Miscellanea.

**"Overwork and Underwork"** was the title of the second of the drawing-room lectures delivered (on the 13th inst.) at 23, Hertford-street, Mayfair, under the auspices of the National Health Society. The lecturer, Dr. Samuel Wilks, F.R.S., observed that with proper intervals for sleep, food, and exercise, there was no reason why mental work should not be indulged in during the remaining portion of a man's time. But that work must be varied. The mind could not always be occupied with one object with impunity. Many faculties must be applied. Every one should have more than one object in life. Professional men, for instance, should spend part of their time in occupations different from their ordinary tasks, otherwise the mind was liable to break down under the strain. Lord Palmerston was a marvel of industry, but he was careful to vary his work. So with Lord Brougham, and so with Mr. Gladstone, who varied his intellectual feats with tree-felling and similar occupations. He (the lecturer) had had practical experience of the injurious effects of long-continued mental work in one direction, while compiling a museum catalogue. No one could long employ a certain set of muscles without fatigue, as was instanced in the paralysis of hammermen, writers' and dancers' cramp, and other special ailments. Want of sleep and other evils generally followed upon too great a devotion to one object. On the other hand, the ladies, and occasionally, too, the men, became hypochondriacs from sheer want of work. The bodily machine would sooner rust out than wear out.

**Lincoln's-inn-fields.**—At the last meeting of the Metropolitan Board of Works, the Duke of Westminster headed a numerous and influential deputation of residents in Lincoln's-inn-fields and members of the Kyrle Society, and presented a memorial urging the Board to take the necessary steps to acquire and maintain as an open space and recreation-ground for the public the large garden of Lincoln's-inn-fields. The boon which would be conferred upon the poor of the neighbourhood by the opening of the garden was feelingly enlarged upon by the Duke. The garden is at present under the control of trustees appointed under an Act obtained in 1734. The memorialists urged that, by the Metropolitan Open Spaces Act, 1877, the Board is empowered to acquire open spaces such as the one in question, and expressed the hope that the Board would be able to enter into a satisfactory arrangement with the trustees for rendering the gardens available for public use. The memorial was referred to the Works and General Purposes Committee for consideration and report.

**Improvements in the Isle of Ransay.**—A correspondent writes:—Mr. E. H. Wood, since he became proprietor of this island, has made great improvements from time to time in new houses for the tenantry and workpeople, and fitting up a large extent of deer and cattle fencing. The latest addition to the erections is an entire farm-steading, suitable for a holding of about 300 acres, and constructed wholly of galvanised corrugated iron. The buildings cover an area of about 45,000 square feet. The steading, which has been designed by Mr. A. E. Stewart, manager to Mr. Wood, and erected by Messrs. Thomas Pearson & Co., of Glasgow, has been arranged with a view to economise labour by having the various food-preparing houses contiguous to the cattle-sheds, while the general design is of an original description. There has also been erected by the same firm, at a convenient distance from the steading, a range of iron cottages, each consisting of one room and kitchen, which are occupied by the grieve, shepherd, and other servants connected with the farm.

**The Alexandra Palace** was re-opened on Monday last under the management of Mr. James Willing, and was visited by nearly 70,000 persons. Everything passed off very well. Some disappointment was, however, felt that, contrary to the notice given of "no extra charge," little was to be seen without extra payment,—a great mistake.

**Freemasonry in Pompeii.**—At a meeting of the Society of Antiquaries, on Thursday, the 13th inst., Mr. John H. Parker, C.B, exhibited a photograph of an ancient mosaic found at Pompeii, and which he believed to be Masonic in its type and character.

**Vitrified Forts.**—At a recent meeting of the Royal Archæological Institute, a paper was read by Dr. Hamilton upon the subject of "Two hitherto Undescribed Vitrified Forts on the Western Coast of Scotland, near Arisaig and Loch Aylort." The paper was illustrated with plans and diagrams, and went to show that the "vitrified forts" which occur in the north of Scotland were not volcanic in their origin, nor sacrifical structures, but strongholds showing evident marks of design, and probably intended for defence, though they might serve as beacons. They stood for the most part,—as in the case of the two now commented upon,—at the edge of lofty rocks, guarding the entrances to inland bays and lochs, and the stones of which they are composed were artificially fused together at the top and sides, while the inner portion of the stones cohered naturally. This showed that the fire by which the materials were fused was applied externally. The existence of such forts had first been discovered about a century ago by John Williams, a mining engineer, who read a paper upon them before the Royal Society of Edinburgh, and they were also mentioned by the antiquary Pennant. Sundry antiquaries thought that they were used as places for purifying and smelting ores. Daines Barrington, on the contrary, held to the theory that they were of volcanic origin. His own opinion was that these forts were erected for purposes of defence by the early Celtic inhabitants of the Highlands, but that they were afterwards re-occupied by their conquerors, and he illustrated the manner in which the stones that surrounded them were fused into a solid mass by examples of a similar process which he had seen in operation near Barnsley and in other parts of Yorkshire. The view of the lecturer was strongly supported by Mr. Octavius Morgan, F.S.A., who took part in the discussion which followed the paper.

**London and Middlesex Archæological Society.**—On Monday, the 10th inst., a paper was read before the members of this Society, in the Court-room of Christ's Hospital, by Mr. W. Pitman, on "The Topography of the Ward of Farringdon Within." Mr. Dipnall, Clerk of the Hospital, occupied the chair, and remarked that the room in which they met was east of the old site of the Greyfriars Monastery, in the Ward of Farringdon Within. Mr. G. H. Birch, Honorary Secretary, having given a brief account of the discovery of the Old Temple, removed to the Strand in 1184 from Holborn-bars, which, he said, had been unknown since Stow's time, Mr. Pitman commenced by a general outline of the history of the City of London from the time of the Romans, and then went on to that of the Ward of Farringdon Within. The ward, he said, was purchased by the City in 1279 from William Farringdon, and it was called after his name. In the reign of Richard III. it was divided into the two portions of which it at present consists. The City then comprised twenty-six wards, at which it now remains. In 1806 Farringdon Within was made a double ward, North and South, and had sixteen precincts. The ward is bounded on the east by Cheapside, on the north by St. Martin's-le-Grand, on the west by Farringdon Without, and on the south by Blackfriars. It contained eight parishes, but in consequence of the Great Fire and modern destruction, there were now only five parish churches.

**Accidents.**—A terribly disastrous boiler explosion occurred at the Birchills Hall Ironworks, Wallsall, on Saturday last. Twelve men were killed instantly, and thirteen others received injuries which have since proved fatal. Many others were seriously injured. The boiler is described as nearly new, and as of the egg-ended vertical type. Such accidents, many of which are doubtless preventible with due care, are far too frequent. Not long ago a similar catastrophe occurred in some ironworks at Glasgow. —— Last week a scaffold accident of a rather serious nature occurred at the extension works of the London-road Railway Station, Manchester. While three men were on a scaffold between 18 ft. and 20 ft. high, some of the ironwork upon which it was resting gave way, and the men were precipitated to the ground.

**The Nineteenth Century Building Society**, in its prospectus sets forth as a special feature that in all the surveys special attention will be paid to the sanitary condition of the houses proposed to be purchased with the view of securing to the members houses which shall be healthy as well as of the full value of the purchase-money.

**Antiquarian Discovery.**—On the 17th ult. a Roman monumental stone was found in a field to the north-east of the well-known Roman station at Maryport. The road leading from the northern gate to the station had lately been tracked and laid bare in several places by Mr. Robinson, who is conducting, with the help of a few friends, a series of explorations in the district, and the stone in question was dug up by him near to the line of the road which goes through that field. The stone (according to the *Carlisle Journal*) consists of an octagonal shaft springing from a fluted base. On the upper part of the shaft is sculptured the face of a woman, encircling which are four fishes, two of them being around the upper and two the lower part of the face. At the top of the head, and fixed into the stone, are what are thought to be traces of a bronze or iron ornament. The back of the stone has carved upon it in relief a large adder or serpent. The stone, except a portion of the base, which has been partially defaced by the ploughshare, was found about a foot below the present surface of the field, lying upon the loam. Its measurements are as follows:—Height, 4 ft.; circumference of base, 4 ft. 10 in.; circumference of neck, 2 ft. 10 in.; ditto of face, 2 ft. 4 in.; length of serpent, 3 ft. 9 in.; length from the base of pedestal or shaft (octagonal) to top, 2 ft. 10 in.; base of shaft to neck, 1 ft. 10 in. The stone has been placed in the portico at Nether-hall.

**The Condition of Schools in New York.**—The New York *Sanitary Engineer* is doing its best to obtain improved plans for schools. The editor, speaking of the condition of the present schools, says,—"Many of them are shockingly overcrowded, and they are nearly all deficient in light, in pure air, in proper heating facilities, and in sanitary conveniences, including proper drainage. In consequence, there is a vast amount of injury done to the health of those who attend them. When in no less than four schools there have been from ten to thirteen teachers absent for sickness, when eminent physicians, like Dr. Egbert Guernsey, state that 'some of the worst forms of disease in both teachers and pupils have been traced directly to the school-house,' and in scores of cases they have been obliged to advise the removal of children, because their exposure was attended with constant sickness,—when these facts are made public, and are not denied by the authorities, it seems as if further delay was criminal. Nor is there any controversy as to the need of a change, or what such change should be. There is no interest to combat, like the organised tenement-house capital; there are no property rights to be interfered with; no pretence of hampering individuals by oppressive regulations. In short, it is only necessary that the public decide to have good schools and, like Aladdin's palace, they will arise."

**An Architect's Will.**—The will (dated Nov. 21, 1876), with a codicil (dated August 9, 1877), of Mr. Samuel Whitfield Daukes, late of The Knoll, Beckenham, and of No. 7, Whitehall-place, who died on the 8th of March last, has been proved by Mrs. Caroline Sarah Daukes, the widow, and the Rev. Samuel Whitfield Daukes, the son, the executors, the personal estate being sworn under 50,000*l.* The testator bequeaths legacies of 1,000*l.* each, payable two years after his decease, to the British and Foreign Bible Society, the Religious Tract Society, the Society for Promoting Christian Knowledge, and the Society for the Propagation of the Gospel.

**Railway Receipts.**—The gross receipts on the 17 principal railways in the United Kingdom amounted for the week ended with May 9, on 12,643½ miles, to 1,061,478*l.*, and for the corresponding week of 1879, on 12,402 miles, to 997,438*l.*, showing an increase of 241½ miles, and an increase of 64,040*l.* There is an increase on the North-Eastern of 30,194*l.*; London and North-Western, 8,330*l.*; Great Western, 6,030*l.*; Midland, 3,276*l.*; South-Eastern, 3,142*l.*; Lancashire and Yorkshire, 3,139*l.*; London and Brighton, 2,921*l.*; North British, 2,079*l.*; Manchester and Sheffield, 1,488*l.*; Glasgow and South-Western, 1,343*l.*; London and Chatham, 1,228*l.*; Caledonian, 1,051*l.*; Metropolitan District, 752*l.*; London and South-Western, 703*l.*; and Metropolitan, 604*l.*—a total of 66,280*l.* Against this, however, the Great Eastern receipts show a falling-off of 528*l.*, and Great Northern, 1,712*l.*, making together 2,240*l.*, thus leaving the net increase at 64,040*l.*, as stated above.

**The Ravenna Baptistery.**—This interesting old building has sunk into the soil to the extent of 10 ft., and it is proposed to lift it up on to dry land. Some objections to this course have been raised in England, and the *Times* correspondent in Rome writes,—

"If the Society for the Protection of Ancient Buildings can offer any sound, practical suggestions to the Italian authorities on this subject, I am more than convinced that they will be willingly received, most impartially considered, and, if possible, profited by. Would it not be practicable for the society to send out one or more competent persons to examine the state of the building, to hear and report, without passion and uninfluenced by preconceived ideas, upon the value of the opinions of these, and of course these only, who, whether for or against the raising of the Baptistery, are thoroughly qualified to speak on the subject, and then, if the society is convinced against the plan proposed, to suggest some other calculated to involve less danger and be more effectual? Would not this be better than calling for an 'English protest' on a subject upon which it is evident thus far the English people are absolutely uninformed? Such a protest will be taken in the light of 'nothing if not critical,' and will only have the effect of creating additional bad blood. 'It's all very well,' said an Italian to me; 'a protest is called for against the danger of our touching the building in the earnest and anxious desire of saving the mosaics, but if you English could buy it, you would very soon be convinced of the practicability of removing it to South Kensington in perfect safety.'"

**Co-operative Congress at Newcastle-on-Tyne.**—The annual Co-operative Congress was opened on Monday, at Newcastle, under the presidency of Dr. Lightfoot, bishop of Durham, who, in the course of his inaugural address, said,—

"Co-operation aims at making the working man his own capitalist, and thus gives him the command of his own labours. In this way it places him in a position of social independence. If it succeeds it will gradually distribute capital among the many, and this it will do without weakening the motive power of capital, for the large combination of members replacing the monopoly of the few will still secure the aggregation of capital in large masses, which is necessary for the full exercise of its force. Meanwhile it will sweeten and stimulate labour, because a working man knows that he will reap the direct fruits of honest and energetic labour. At the same time, the principle of association tends to correct and qualify the egotism of mere thrift, of mere self-help. Compared with any other expedients for attaining the same, or substantially the same, results, co-operation has the highest claim to respect. If the movement grows, the time will come when a co-operative factory, or one co-operative store, must compete with another. It is probably best for the community at large that this should be so."

**Windsor and Eton Art Classes.**—Princess Christian of Schleswig-Holstein presented, at Windsor Guildhall, on the 15th inst., the prizes gained by the students attending the Windsor and Eton Art Classes. The report showed that forty students had received certificates, six second-grade prizes, fourteen for excellence, and three third-grade prizes in the national competition at South Kensington, while one student had received a full diploma for all subjects. The Mayor of Windsor's prize was awarded to Miss Saunders, Miss Robertson taking a prize given by Dr. Goodford, the provost of Eton. Miss A. Hiscox took the prize presented by Mr. Richardson-Gardner, M.P., and Miss Buckland, of Wraysbury, that given by Mrs. Gardner. The Master's first prize went to Mr. G. Howell, Master Orchard gaining the second. The first prize accorded by the committee of the Albert Institute was awarded to Miss Buckland, their second prize being obtained by Miss Tarver, of Eton.

**The Court of Common Council** has resolved to confer the honorary Freedom of the City on Sir Henry Bessemer, in recognition of his valuable discoveries, which have so largely benefited the iron industries of this country. Referring to this proposal, Mr. R. F. Mushet puts in a word for himself,—

"During the present year about four million tons of Bessemer steel will be produced in England, Europe, and America, under the joint processes of Sir Henry Bessemer and myself, Sir Henry's process being the ship, and my process the rudder which has rendered the former process manageable and complete. And, as no ship can navigate without a rudder, so my process has, up to the present hour, been essential to the commercial success of Sir H. Bessemer's great invention. In 1876, I received from the Iron and Steel Institute the Bessemer Gold Medal in acknowledgment of my invention. Possibly the Lord Mayor of London might do worse than present me with the Freedom of the City of London in a silver casket, on the ground that my process is essential, not only to the Bessemer process, but likewise to the open hearth process of steel-making of Dr. Siemens, second only in value and importance to that of Sir Henry Bessemer."

**School of Art Wood-Carving.**—We are asked to state that one free studentship in the day classes, and four in the evening classes of the School of Art Wood-Carving, at the Royal Albert Hall, Kensington, are at present vacant. These studentships are maintained out of funds provided by the City and Guilds of London Institute for the Advancement of Technical Education. Forms of application may be obtained by letter addressed to the Secretary of the Wood-Carving School, at the Hall.

**Fires at Builders'.**—Early on the morning of the 14th inst. the works of Mr. F. Mark, builder, &c., Bell-street, Edgware-road, were discovered to be on fire. The property consisted of a long range of workshops, under a covered yard, above which there were floors wherein the various branches of the trade were carried on, and in the rear of all a large quantity of timber was stored. All this property was soon attacked by the flames. The fire engaged the attention of the brigade for nearly five hours. ——A very destructive fire broke out on Wednesday afternoon on the premises of Mr. William Downs, builder, Hampton-street, Walworth-road, which extend beneath some of the railway arches south of the Elephant and Castle Station of the London, Chatham, and Dover Railway. Shortly before two o'clock, an hour after the men had returned from dinner, flames were seen issuing from the carpenters' shops, and they immediately gained a hold which could not be overcome. The railway traffic had to be stopped, because it was impossible for the trains to run through the flames and heated smoke. The cause is unknown.

**An Improvement at South Kensington.** At the last meeting of the Metropolitan Board of Works, it was resolved, on the recommendation of the Works Committee, that the Board should contribute one-half of the cost (estimated at 500*l.*), of the purchase of a piece of land by the Vestry of Kensington, for the purpose of widening the Old Brompton-road, by Rowland-gardens, and the south end of Gloucester-road, such contribution not to exceed the sum of 250*l.* It was stated that the Old Brompton-road would be widened from 30 ft. to 50 ft., and that Gloucester-road, at its junction with Old Brompton-road, would be widened from 39 ft. to 50 ft.

**The Basement of the Royal Exchange** was opened on the 12th inst. as a restaurant, under the auspices of the Coffee Public Houses National Society. The area set apart has been decorated and furnished with every convenience for serving breakfasts, luncheons, and dinners to a large number of customers. The restaurant is lighted by electric lamps. A description of the works now carried out appeared some months ago in our columns.

**Tubular Piles.**—Messrs. Siemens have taken up the exclusive licence for all countries for the use of Le Grand & Sutcliff's dwarf patent tubular piles for the foundations or stems of their telegraph-poles and electric purposes generally. Trials were made some time back at Messrs. Siemens's works at Charlton, the result of which demonstrated that the average time for fixing a foundation 4 ft. or 5 ft. deep ranged from five minutes to fifteen minutes, and proved the stability of the piles to be very great.

**Sculpture for Buildings in Paris.**—Sixty-two statues for the exterior decoration of the Hôtel de Ville have been already ordered, and there still remain ninety-eight others, the artists of which have not yet been commissioned; these, when carried out, will raise the total of the statues to decorate the façade of the new Paris Town-hall, to 302, the execution of which will, it may easily be imagined, afford ample occupation for some time to come to the sculptors on the banks of the Seine.

**St. Chad's Church Tower, Stafford,** is reported to be in such a dangerous condition that the borough surveyor has ordered its immediate repair or total demolition. The church dates from Norman times. Its nave, chancel, and presbytery are of the original work. The chancel arch is richly carved with chevrons, beak-heads, human figures, and *fleurs-de-lis*. Efforts are being made to raise funds for the restoration of the tower.

**Trade Outrage at Rotherham.**—Twenty thousand bricks are stated to have been destroyed by a trade outrage at Rotherham Brickyard on Sunday last. Soft bricks were trodden upon and spoilt, and burnt bricks were broken by shovels. Barrows and other articles used in the manufacture of bricks were smashed to pieces and thrown into kilns. Two men have been apprehended on suspicion.

**Royal Architectural Museum.**—The next lecture of the "Caskets of Jewels" series will be given by Mr. J. P. Seddon on Tuesday next, at eight o'clock, on which occasion special attention will be called to the facilities and advantages of the museum for instruction in technical education, based on models of the purest and best types of Classic and Mediæval art. Admission is by ticket only, free.

**Southampton.**—The congregation worshipping at the Philharmonic Hall, under the ministry of Mr. H. S. Earl, M.A., have decided to commence the erection of their new church forthwith, a site on the Ogle estate having been presented to them. The plans and drawings have been prepared by Mr. Arthur Martin, architect. The church will be built to seat 1,000 persons, the principal dimensions being,—length, 100 ft.; breadth, 48 ft.; and height, 50 ft. The building will be treated in the Lombardic style, with terra-cotta capitals and dressings, the outer walls being in white brick, relieved with red and black. Galleries will run round the whole of the interior, and a reception-room and vestry will also be provided. The principal entrance will be from Above Bar-street, but there will be other entrances from the new street which is about to be formed, and from the side nearest the Philharmonic Hall. Sunday school and class-rooms will afterwards be erected.

**Freeing the Bridges.**—It has been officially announced by Sir James McGarel Hogg, chairman of the Metropolitan Board of Works, that the bridges over the Thames at Wandsworth, Putney, and Hammersmith, will, as soon as possible after all the legal formalities have been observed, be opened free to the public. The Prince and Princess of Wales have consented to be present on the occasion. The date will probably be about the middle of June.

**Concrete Paving.**—A large part of the footway on the western side of High-street, Shoreditch, has just been paved with the Patent Victoria Stone, the area being about 15,000 square feet. The traffic along High-street on the western side, in front of the London and County Bank, the Standard Theatre, &c., is incessant, and will be a further test as to the value of this material for paving purposes.

**Iron and Steel Institute.**—The annual conference of this Institute has just been held in the hall of the Institution of Civil Engineers, Great George-street, Westminster. A Continental meeting will be held later in the year at Düsseldorf.

**The Cost of a Government Inquiry.**—A local Government inquiry, which has lasted over forty-five days, respecting the taking of some land for a sewage farm near Hampton Court, has just concluded. The expenses of the inquiry are expected to exceed 20,000*l.*

## TENDERS

For new wing to the National Hospital for the Paralysed and Epileptic, Powis-place, Queen-square, Bloomsbury. Mr. M. P. Manning, architect. Quantities supplied:—

| | | Months. |
|---|---|---|
| Lathey Bros. | £9,330 0 0 | ... 9 |
| Merritt & Ashby | 9,255 0 0 | ... 9 |
| Peto Bros. | 9,133 0 0 | ... 12 |
| Ashby Bros. | 9,085 0 0 | ... 12 |
| Simpson & Son | 8,996 0 0 | ... 6 to 7 |
| Trollope & Son | 8,983 0 0 | ... 12 |
| Holland & Hannen | 8,893 0 0 | ... 10 |
| Manley | 8,777 0 0 | ... 12 |
| Hobson | 8,633 0 0 | ... 9 |
| Longmire & Birge | 8,593 0 0 | ... 9 to 10 |
| Wartner, Smith, & Son | 8,495 0 0 | ... 9 |
| Downs & Co. | 8,047 0 0 | ... 9 |
| Brass (accepted) | 7,963 0 0 | ... 9 |
| Patrick | 7,945 0 0 | ... 8 |
| Shepherd | 7,890 0 0 | ... 10 |

For stables and living rooms, Boar's Head-yard, Westminster. Mr. E. Vigers, architect. Quantities supplied:—

| | |
|---|---|
| Hook & Oldrey | £1,594 0 0 |
| Burningham | 1,566 0 0 |
| Downs | 1,547 0 0 |
| Hobson | 1,496 0 0 |
| Lamble | 1,397 0 0 |
| Deacon | 1,369 0 0 |

For the erection of a villa residence, for Mr. A. Brown, at Orpington. Mr. G. St. Pierre Harris, architect:—

| | |
|---|---|
| Grover | £927 0 0 |
| Haisman (accepted) | 855 0 0 |

For new Wesleyan School Chapel, Turnham-green. Messrs. A. Hiscoe & J. C. Bilton, architects. Quantities by Mr. Charles G. Maylard:—

| | Portland Stone and Malm Facings. | Bath Stone and Malm Facings. | Bath Stone and Stock Facings. |
|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. |
| Lawrence | 2,113 0 0 | 2,087 0 0 | 2,053 0 0 |
| Stephenson | 2,040 0 0 | 1,908 0 0 | 1,938 0 0 |
| Silver & Sons | 2,061 0 0 | 1,931 0 0 | 1,931 0 0 |
| Thompson | 1,980 0 0 | 1,959 0 0 | 1,880 0 0 |
| Haynes | 1,935 0 0 | 1,899 0 0 | 1,869 0 0 |
| Angood | 1,953 0 0 | 1,876 0 0 | 1,860 0 0 |
| Adamson & Sons | 1,940 0 0 | 1,895 0 0 | 1,857 0 0 |
| Beale | 1,950 0 0 | 1,860 0 0 | 1,833 10 0 |
| Ireson | 1,926 0 0 | 1,806 0 0 | 1,796 0 0 |
| Rands & Sons | 1,784 14 3 | 1,733 1 4 | 1,719 1 4 |
| Whiteman | 1,737 0 0 | 1,673 0 0 | 1,637 0 0 |

For alterations at the Railway Tavern, Blackfriars-road. Mr. H. J. Newton, architect:—

| | |
|---|---|
| Lamble | £733 0 0 |
| Rockley | 749 0 0 |
| Grimwood | 743 0 0 |
| Godden | 725 0 0 |
| Wagner | 645 0 0 |
| Beale | 570 0 0 |
| Anley | 480 0 0 |
| *New Counter.* | |
| Warne | 172 0 0 |
| South | 165 0 0 |
| Heath | 151 0 0 |
| Sanders | 150 0 0 |

For gasfittings at the New Infirmary, Notting-hill, for the parish of St. Marylebone. Messrs. H. Saxon Snell & Son, architects:—

| | |
|---|---|
| May Bros. | £1,638 13 1 |
| Abercrombie & Son | 1,490 0 0 |
| Strode & Co. | 1,395 0 0 |
| Potter & Son | 1,308 0 0 |
| Berry & Sons (accepted) | 1,280 0 0 |

For painting works, &c., at the Fulham-road Workhouse and Infirmary, for the Guardians of St. George's Union. Messrs. H. Saxon Snell & Son, architects:—

| | |
|---|---|
| Patman & Fotheringham | £1,577 0 0 |
| Childs | 1,548 10 0 |
| G. & W. Watson | 1,144 0 0 |
| Cooke | 1,103 0 0 |
| Wall | 1,024 0 0 |
| Derby (accepted) | 857 0 0 |
| Critchfield & McCarthy | 500 0 0 |

For engineering works, at the St. Marylebone Infirmary, Rackham-street, Notting-hill, for the Guardians of the parish of St. Marylebone. Messrs. H. Saxon Snell & Son, architects:—

| | |
|---|---|
| Benham & Sons | £6,841 0 0 |
| May Bros. | 6,589 11 1 |
| Potter & Sons* | 6,313 9 0 |

* Messrs. Potter & Son's tender accepted for all the works, except heating sick wards, £5,608 9s.

For structural alterations to Clarence Hall, Kingston-on-Thames, for the Kingston Coffee Tavern Company. Mr. James Bateman, C.E., architect:—

| | |
|---|---|
| Oldridge | £178 13 0 |
| Gosling (accepted) | 146 0 0 |

The fitting-up of tavern will be a separate tender.

For proposed additions to the Convent of Mercy, Dockhead, Bermondsey, for Dr. Danell, R.C. Bishop of Southwark. Mr. J. Crawley, architect. Quantities supplied by Messrs. Dadgeon Bros.:—

| | | Extra if Pews in Oak. |
|---|---|---|
| Patman & Fotheringham | £1,985 | £175 |
| King & Son | 1,873 | 70 |
| Blake, Gravesend | 1,590 | 70 |
| Longmire & Burge | 1,548 | 65 |
| Hill, Higgs, & Hill | 1,399 | 50 |
| Tyerman | 1,380 | 20 |

For new schools in connexion with the Children's Home (Lancashire Branch), Edgeworth, near Bolton. Quantities supplied. Mr. Thos. Ormrod, architect:—

| | |
|---|---|
| Statham & Sons, Pendleton | £1,137 0 0 |
| Dougill & Brierley, Bolton | 1,089 0 0 |
| Townson, Bolton | 980 0 0 |
| Peacock, Turton | 967 0 0 |
| Taylor, Farnworth | 880 0 0 |
| Martin Bros., Turton (accepted) | 810 0 0 |

Note.—Excavation and drainage excluded, and stone and flags provided by the Committee.

For engine and accumulators for lifts, for the South Australian Government:—
Bunnett & Co. (Limited), accepted.

For alteration to lift at Kensington Workhouse, for the Metropolitan Asylums Board. Messrs. A. & H. Harston, architects:—
Bunnett & Co. (Limited), accepted.

For hydraulic lifts, for Trustees of the late Mr. Henry Hayes, Liverpool. Mr. Thos. Mercer, architect:—
Bunnett & Co. (Limited), accepted.

For iron and polished granite drinking-fountain, for the Liverpool-street Station, Great Eastern Railway. Mr. A. Langley, engineer:—
Bunnett & Co. (Limited), accepted.

For rebuilding 153, Fenchurch-street, for Mr. I. J. Kenderdine. Messrs. Osborn & Russell, architects. Quantities supplied:—

| | |
|---|---|
| F. F. & J. Wood | £4,267 0 0 |
| Merritt & Ashby | 4,105 0 0 |
| Woodward | 4,050 0 0 |
| Ashby & Horner | 3,988 0 0 |
| Scrivener | 3,979 0 0 |
| Pritchard | 3,973 0 0 |
| Ashby Bros. | 3,958 0 0 |
| Colls & Son | 3,943 0 0 |
| Brass | 3,775 0 0 |
| Sabey & Son | 3,650 0 0 |

For erecting detached house, Coulsdon, Surrey, for Mr. H. H. Mitchell. Messrs. Osborn & Russell, architects. Quantities supplied:—

| | |
|---|---|
| Brown | £1,417 0 0 |
| Hunter & Bryant | 1,411 0 0 |
| Ward | 1,389 0 0 |
| Jarrett | 1,386 0 0 |

For house, Brockley. Mr. J. O. Abbott, architect. Quantities by Mr. G. Jackson:—

| | |
|---|---|
| Downs | £1,492 0 0 |
| Brass | 1,465 0 0 |
| Shaw | 1,463 0 0 |
| Julian & Co. | 1,409 0 0 |
| Tyerman | 1,391 0 0 |
| Downs & Co. | 1,370 0 0 |
| Nichols | 1,365 0 0 |

For the Herbert Morrell Cottage Hospital, Wallingford. Mr. J. S. Dodd, architect:—

| | |
|---|---|
| Dodd, Reading | £1,020 0 0 |
| Wells, Oxford | 1,000 0 0 |
| Brazier, Wallingford | 990 0 0 |